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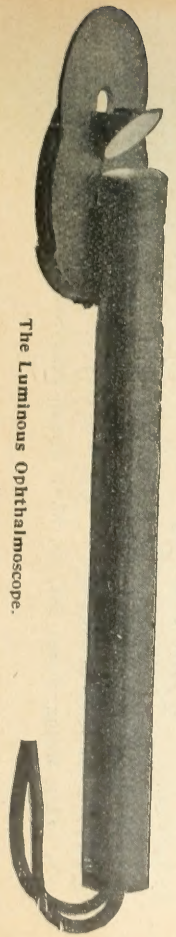

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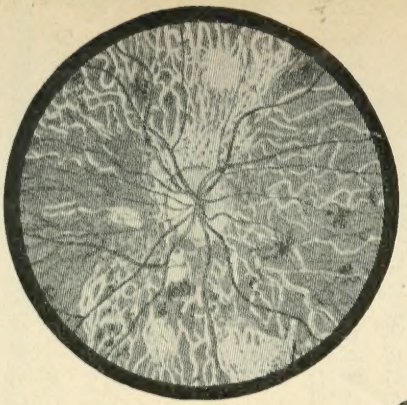

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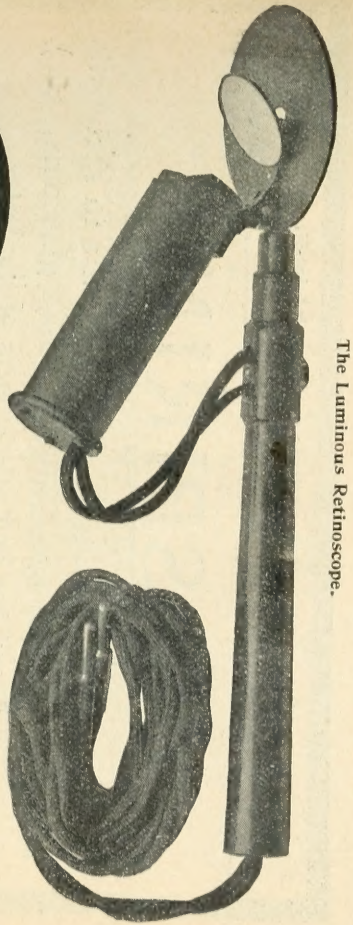

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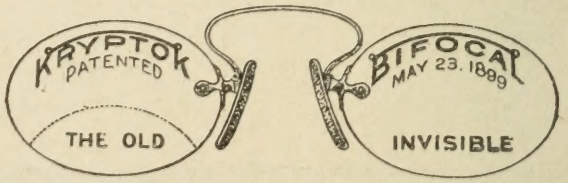

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ORIGINAL COMMUNICATION.

INTRAOCULAR VASCULAR DISEASE.*

BY

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In dealing with the subject of intraocular vascular disease it is desirable to regard it from a larger point of view than that of the pure ophthalmic specialist. Its effects on the eye itself are indeed of the greatest interest and importance, and in the eye vascular changes are displayed with a minuteness nowhere else obtainable in the living body. But in most instances our first

* Address delivered in the Post-Graduate Course of Ophthalmology at Oxford, July 24th, 1906.

thought on finding retinal vascular disease is not "what is the prognosis with regard to sight," but "how far is the disease to be regarded as an indicator of the condition of other vessels in the body, and how far, therefore, does it affect the prognosis with regard to the life of the patient?"

No one will deny the importance of the information so obtained. The method of examination is infinitely more delicate than palpation of the radial or temporal arteries through the skin. By means of it we are often led to an unfavourable view of the condition of the cerebral vessels, or to a diagnosis of grave constitutional disorders, such as nephritis or diabetes. Its importance has been shown by R. Marcus Gunn (*Trans. Ophthal. Soc.*, Vol. XVIII, p. 356), who reported fourteen cases of intraocular vascular disease, in which cerebral hæmorrhage subsequently occurred.

Yet when this has been admitted, there are limitations to be set and reservations to be made. The ocular circulation is not to be looked upon as a mere expansion of the cerebral, in the same sense as the nerve is an expansion of the brain. It is far from responding passively to changes in the intracranial circulation, and by no means always shares in the diseases of the latter. Nothing emerges more clearly from pathological research than the fact that angiosclerotic processes are almost always exceedingly irregular in their distribution. It is easy to prove that some patients show extensive intraocular angiosclerosis without the least palpable rigidity of their radial or temporal arteries, and the reverse is also true. Moreover, the radial or temporal arteries are admitted to be but imperfect indicators of the state of the cerebral vessels. These considerations show that one region may be affected while other areas are normal. But, in addition, within the same area, vessels of different sizes may be differently affected, syphilis for instance being a morbid process which falls especially on the smaller arterioles. Not only so, but in the examination of serial sections from small vessels one frequently finds the most notable differences within a very short space. In the central artery of the retina, for instance, the region of the lamina cribrosa is a favourite seat of endarteritic processes, and we may find the artery almost obliterated by a knob-like nodule in this situation, yet practically normal a millimetre or two up the nerve. Similarly, the central artery may be much diseased, and the retinal vessels almost free, and *vice versa*. The frequent irregularity of distribution of vascular disease in the retinal vessels as seen with the ophthalmoscope is also well known.

It is evident, therefore, that disease of the retinal vessels is not positive proof of disease in any other vascular area, although

it furnishes a presumption in favour of its existence ; a presumption which will be strengthened if any general cause of angiosclerosis can be found, such as syphilis, diabetes, or nephritis. On the other hand, the absence of retinal changes is no positive proof that other vascular areas are intact. This follows from what has already been said as to the irregularity of distribution of endarteritis in general. It has also been proved that fairly extensive disease may exist in the retinal vessels without ophthalmoscopic evidence. Thus, Hertel (*Arch. für Ophth.*, Bd. LII, 2 Heft, p. 191) examined microscopically the eyes of a large number of old people in whom no abnormality had been visible with the ophthalmoscope ; he found angiosclerotic changes in a considerable number of them. Some observations of my own confirm this.

These facts detract in some degree from the value of the ophthalmoscopic evidence of general vascular disease ; yet it remains the best indicator of the state of the vessels generally which we possess. Positive evidence is of more value than negative ; when retinal vascular disease is present the prognosis is always grave, when absent it is not necessarily good. In all cases the evidence furnished by rigidity of the peripheral vessels, by high arterial tension, by hypertrophy of the heart, and by accentuation of the cardiac sounds, must have due weight.

With regard to the nature of the pathological processes at work it is to be remarked that if all changes which involve thickening of the vessel wall and increased rigidity are included in the term angiosclerosis, it is not entirely a pathological process. It is in part a senile change which we should expect to find in the vessels of any old person, in part a definite response to a pathological stimulus, and these two components are not always clearly separable. Given the stimulus, however, it may appear far in advance of the usual age, as, for instance, in juvenile nephritis.

Before entering into the histological details of the process it is desirable to mention a few points in the normal microscopical anatomy of the central vessels.

From its entrance into the nerve to the lamina cribrosa the central artery has the structure of an ordinary small arterial twig. The adventitia and media call for no special remark. The intima consists in reality of three layers : the elastic membrane or membrane of Henle, a thin layer of subendothelial tissue (which is very little evident in the normal eye, especially in young subjects), and the endothelium. When the lamina cribrosa is reached, various changes occur. The lumen becomes narrower, a fact which has a double importance, since it must cause eddies and so favour the occurrence of endarteritis, and since it will tend to arrest bodies circulating in the blood which are

small enough to enter the central artery at all. Both of these considerations are clearly borne out by actual facts.

But, in addition, there are structural alterations. The surrounding connective tissue becomes much denser, the elastic membrane is replaced by a feltwork of fine fibres which still separates the endothelium from the outer layers, and the subendothelial tissue seems to disappear. A retinal artery, therefore, consists of an endothelial lining and a connective tissue wall in which elastic and muscular fibres are present. Both the elastic and muscular fibres disappear in the smallest peripheral twigs.

The central vein has a more delicate wall. It consists almost entirely of connective tissue with curly elastic fibres. Muscle cells are very scanty. There is some condensation of the elastic tissue towards the lumen, but no true elastic *membrane*; there seems to be no subendothelial tissue, so that the endothelium rests directly on the connective tissue of the wall. The vein also undergoes structural modification in passing through the lamina cribrosa. The elastic tissue of the wall mingles with the elastic tissue of which the lamina is largely composed, and within the eye there are no elastic elements in its walls. This fact is of much importance, since by special methods of staining for elastic tissue a retinal artery can be distinguished from a vein, a distinction which is by no means easy when they are pathologically altered. A retinal vein, therefore, consists of an endothelial lining and a connective tissue wall. There are no muscular fibres.

It may be remarked in passing that although I speak constantly of "elastic fibres" and "elastic membranes," there is no real proof that these structures possess elasticity. The proof is rather in the other direction, for if they were truly elastic they would adapt themselves to partial collapse of the arterial wall instead of being thrown into crenated and curly forms. Moreover, their proliferation seems always to be associated with *loss* of elasticity, as in the case of arteriosclerosis and of various senile changes in the skin and elsewhere.

Any or all of the structures mentioned above may be diseased in angiosclerosis, and according as the process falls with especial severity on one or the other, different microscopical, and presumably different clinical appearances will be produced. Moreover, the differences in structure between the retinal and central vessels produce differences in the microscopical lesions which are found in them.

In the central artery the intima is usually chiefly affected. Changes in the media are not very notable, and are difficult to diagnose, because the coat varies so much in thickness according

to the distension or collapse of the vessel. The adventitia hardly exists as a layer separable from the surrounding connective tissue. In the majority of cases all the lesions are inside the elastic membrane. The membrane itself is often thickened and may be split into two or more layers. Inside it there are layers of cells among which small, curly, elastic fibres are made evident by special staining (FIG. 1). These are often of some

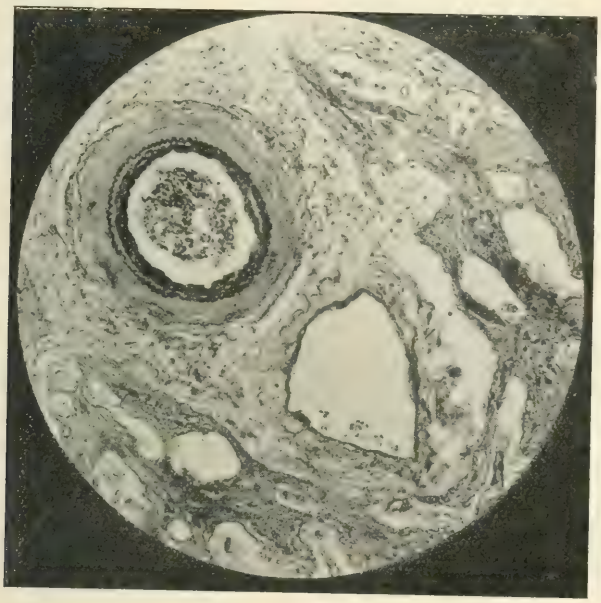

FIG. 1.

Endarteritis of the central artery of the retina. Weigert's elastic tissue stain. Inside the crenated elastic membrane of Heule there are several layers of new-formed elastic fibres. Among these there are many small cells which are not well brought out by this method of staining. Note the absence of a true elastic membrane in the vein.

size, so that they form, as it were, small elastic membranes within the true membrane, but they never reach all the way round. The cells among them frequently swell enormously, and may degenerate, leaving only a granular detritus. Sometimes they contain more than one nucleus, and have the appearance of small giant cells. The lumen is usually lined by a single layer of well-formed endothelial cells, even when the layers beneath are extremely degenerate, and this fact strongly suggests that the essential lesion is not a proliferation of the endothelium, as is often stated, but of the subendothelial layers.

Further evidence in the same direction is furnished by a

consideration of the changes in the retinal vessels. In them disease of the intima takes the form of cellular proliferation, but among the proliferated cells elastic fibres are *not* found. It would seem probable, therefore, that the endothelium of arteries is incapable of forming elastic fibres, but that the subendothelial tissue, which probably originally laid down the proper elastic membrane, is capable, under pathological stimulation, of laying down new deposits of the same substance. This subendothelial tissue being absent in the retinal vessels, no elastic membrane is normally laid down, and under pathological stimulation no new fibres are formed in the intima.

In the retina, however, the intima is not the only layer which shows lesions. The connective tissue wall is often greatly thickened, constituting a condition which may be termed "fibrosis." Where retrogressive changes ensue and nuclear staining is lost, this form results in hyalin degeneration. Both of these thickenings narrow the lumen, but in a characteristically different manner. When the intima is affected the narrowing is almost always eccentric, the lumen being displaced to one side; when the connective tissue wall thickens it encroaches more or less concentrically on the lumen.

The changes mentioned occur both in the arteries and in the veins, and although one or the other type usually predominates, they are by no means mutually exclusive.

These pathological details are, however, of minor interest if they have no clinical bearing. If we cannot tell which form of vascular disease we are looking at with the ophthalmoscope, they do not add much to our practical knowledge. The subject is one which requires much care in investigation. Ideally, an accurate sketch of the fundus before enucleation, extreme care in orientation, and serial sections are desirable. The ophthalmoscopic signs of vascular disease, apart from actual hæmorrhages and degenerative spots may be divided into (1) narrowing of the blood current without very evident changes in the wall, or perhaps with "silver wire" arteries and banking of the veins, and (2) white lines along the vessels. It would seem probable *a priori* that such white lines would be due to thickening of the connective tissue coat, and the simple narrowing of the lumen to endothelial proliferation. For the latter supposition at least there is actual proof in a case reported by Raehlmann, in which an artery became very much narrowed close to and on the disc. When the eye was subsequently enucleated, the same vessel proved to be narrowed by endothelial proliferation. The cases of Flemming (*Trans. Oph. Soc.*, vol. xxiv, p. 126), and Buzzard (Gower's *Medical Ophthalmoscopy*, 4th ed., p. 200) may also be mentioned, in which both the ophthalmoscopic appearance of

the fundus and the microscopical appearance of the vessels are given. But it must be confessed that our knowledge stands in need of extension by more cases of the same kind, worked out vessel by vessel with careful reference to the clinical appearances.

The distinction is not without importance, for it seems probable that the two conditions are due to different causes. Disease of the intima is most probably a response to a circulating toxin which would naturally chiefly affect the internal coat; thickening of the connective tissue wall is probably a strengthening of the wall to compensate for raised blood pressure. The difference was well illustrated in a case of thrombosis of the central vein in a patient the subject of nephritis. The retinal vessels showed fibrosis as well as proliferation of the intima. In the central vein above the probable site of obstruction, proliferation of the intima alone was present. The only probable explanation here was, that the proliferation of the intima was due to a circulating toxin and was therefore present both above and below the obstruction, whereas the fibrosis was due to raised blood pressure, and was therefore only present on the retinal side of the obstruction.

It will be noted that all the changes mentioned tend to strengthen the vessel wall rather than to weaken it. Why, then, does hæmorrhage result? It would seem probable that it does not occur at the actual seat of disease; but the changes cause obstruction to the circulation, damming back of the blood, and rupture at some spot where the wall is unthickened, or in the capillaries where the wall is incapable of much thickening. The result is a retinal hæmorrhage which, if small, will be confined to the inner layers, since these are the layers which contain the vessels. If it is in the nerve fibre layer, it will tend to spread longitudinally among the fibres, giving the well-known flame-shaped or streaky appearance. Small, round, retinal hæmorrhages are more probably in the inner reticular or nuclear layers. But the hæmorrhage may easily break through into the subretinal space or into the vitreous. The occurrence of large hæmorrhages between the retina and hyaloid membrane is very doubtful. They seem to be really in the superficial layers of the retina, in spite of hypothetical anatomical considerations to the contrary. Fisher's statement to that effect (*Royal London Ophthal. Hospital Reports*, vol. xiv. p. 291) has recently been confirmed in all points by the report of another case examined microscopically by v. Benedek (*Arch. f. Ophth.*, Bd. LXIII. 3 Heft, p. 418).

In the case of vitreous hæmorrhage, the blood is usually absorbed if not very abundant, and if no further additions are made to it. But in some cases the interesting condition known

as "retinitis proliferans" results. The essential lesion here is undoubtedly an organisation of the blood, proceeding from the mesoblastic tissue round the retinal vessels, especially those on the papilla, which have the greatest amount of connective tissue around them (Parsons).

It is interesting to inquire why this should occur in some cases of vitreous hæmorrhage and not in others. Flemming (*Trans. Oph. Soc.*, Vol. xviii, p. 154) has put forward the suggestion that the mere presence of blood is insufficient, but that if the stimulus of some circulating toxin is added, such as syphilis, uræmia, etc., organisation will occur. The hypothesis has much to recommend it, but it should also be remembered that the circulating toxin is comparatively frequent in these cases of vitreous hæmorrhage, whereas retinitis proliferans is rare. On the other hand, cases of retinitis proliferans occur in which the circulating toxin cannot be proved. It may be that this is because it escapes our methods of investigation. Perhaps the occurrence of vascular disease and vitreous hæmorrhage may itself be taken as proof of a toxic condition of the blood. I have had the opportunity of examining pathologically five cases of this kind. In one there was a history of syphilis, and a thrombosis of the central vein with vitreous hæmorrhage had occurred immediately after an attack of influenza. In another there was albuminuria. In a third there was a history of septic poisoning; I have no clinical notes of the fourth. In a fifth there was no record of any illness and the urine was normal. I could add a clinical case of the same kind. A similar form of organization not infrequently occurs in connection with hæmorrhages in the anterior chamber. It leads to the formation of a fibrous membrane on the front of the iris, which, by its subsequent contraction, is one of the commonest causes of ectropium uveæ.

So far, I have dealt with the general subject of vascular disease, but there are two manifestations of it which have received, and indeed merit, the status of separate diseases. I refer to thrombosis of the central vein and so-called embolism of the central artery.

Through the kindness of various gentlemen I have had the opportunity of microscopically examining 16 cases of the former affection, but I must here confine myself to the broadest outlines.* It is not a very rare disease, not nearly so rare as obstruction of the artery. The clinical features are well known. The enormously distended and tortuous veins and the suffusion of the retina in every part with large and small hæmorrhages, form a very sharply-defined and unmistakable clinical picture. In

*For details and illustrations see *Royal London Oph. Hosp. Reports*, Vol. xvi, pp. 62 and 516.

most instances very little improvement in vision is to be hoped for. In a very large number, probably the majority, of cases a peculiarly intractable form of glaucoma results, which usually leads, in spite of treatment, to the loss of the eye.

There is therefore little or no subdivision, or only one of degree, to be made from the point of view of the clinical course of the disease, but I wish to point out that there is some reason to divide the individuals affected into two groups. In one the patient is probably old—above 50 years—and shows marked signs of general angiosclerosis in the state of his peripheral arteries and heart; albuminura is frequently, but not always, present. In the other group the patient is comparatively young—probably between 20 and 30 years; there are no signs of arteriosclerosis in the other fundus or elsewhere in the body, and there is usually no albuminuria. Frequently there is a history of the occurrence of dimness of vision during an illness, very often an attack of influenza or a severe feverish cold. There may be a history of syphilis, septic poisoning, rheumatism, or gout. It is of course impossible to draw a perfectly hard and fast line between the two groups, but cases frequently occur which belong typically to the one or to the other. It does not appear that the prognosis with regard to the eye itself differs, but it is evident that the prognosis with regard to life will be worse in the old and angiosclerotic subjects.

I may remark in passing that thrombosis of the central vein *per se* seems to afford very little information with regard to the prognosis for life. I know of patients who have been perfectly well from 2 to 5 years after its occurrence. It is true that some other patients have died, but in these instances the prognosis never depended on the thrombosis, but on evidence of nephritis and advanced vascular disease elsewhere, of which the thrombosis was merely a symptom.

To return, however, to the two groups which I have mentioned, there is evidence that the pathological changes underlying them are different. In the first the lesions are essentially those of angiosclerosis, while inflammatory changes are conspicuously absent. In addition to the disease of the veins, the central and retinal arteries usually show advanced endarteritis. It is probable that this endarteritis is the primary lesion. In consequence of it the circulation is greatly slowed, and thrombosis is favoured in the veins. It may be aided also by similar primary disease of the veins. In the second group, on the other hand, inflammatory changes predominate. Frequently the whole course of the central and retinal veins is picked out, and similar changes of less degree may be found along the arteries. The lesion is a round cell infiltration, and the thickening of the connective tissue

wall and proliferation of the intima so prominent in the other group are absent. These facts speak strongly for a circulating toxin, and further confirmation of this supposition is found in the fact that it is this group which especially furnishes the cases of retinitis proliferans. As already mentioned, the toxin of influenza is especially active. The case of the central vein is by no means isolated in this respect; thrombosis of veins following influenza is a sufficiently well known fact in general medicine. This group probably furnishes most of the cases which are in good health years afterwards; the thrombosis was merely an accident in the course of a disease from which a complete recovery has been made.

A thrombus having occurred from whatever cause, its effects on the intraocular circulation are easily understood. Since there are no collateral vessels capable of carrying on a sufficient circulation, the blood is dammed back, the retinal veins became enormously distended and tortuous, and hæmorrhages take place probably both by rupture and diapedesis from the smallest venules and from the capillaries.

A much more difficult question relates to the occurrence of glaucoma in these cases. I am unable to give exact figures as to the proportion of cases in which it is observed, but there can be no doubt as to its frequency, a frequency far greater than can be accounted for by coincidence. The mere fact that it occurred in all 16 of the cases examined by me, sufficiently shows this. Moreover, in not one of those did glaucoma occur in the other eye. The type also differs in some respects from ordinary glaucoma.

It has been suggested that the glaucoma is not the result of the thrombosis, but that both are due to the common cause, angiosclerosis. This, however, does not account for the eye affected with thrombosis being always attacked, since angiosclerosis will presumably be approximately equal in the two eyes of the same person. Moreover, it does not take account of those cases which occur in young persons in whom angiosclerosis is undoubtedly absent. The earliest age recorded is eight. In some cases the glaucoma has followed upon the use of a mydriatic, and in some iritis has been present. Both of these are, however, quite exceptional factors. We must conclude, therefore, that in some way the glaucoma is the result of the thrombosis with its consequent hæmorrhagic retinitis.

What the connection is, is a difficult question; it is easier to say what it is not. In the first place, it is not due to hæmorrhage into the vitreous. This would account for it very well by raising the intravitreous pressure, and driving forward the lens and iris. But it is certainly not present in the majority of cases, and,

moreover, it may occur without producing glaucoma. A certain proportion of the intraocular lymph gains an exit from the eye along the perivascular lymph sheaths of the central vessels. The block on the vein might conceivably cause damming back of this lymph, but as it constitutes only a minute fraction of the drainage of the eye, it is difficult to see how it could send the tension up if the other drainage channels were quite clear.

The following explanation has, perhaps, the fewest objections. In consequence of the severe congestion and hæmorrhagic suffusion of the retina, the character of the lymph circulating in

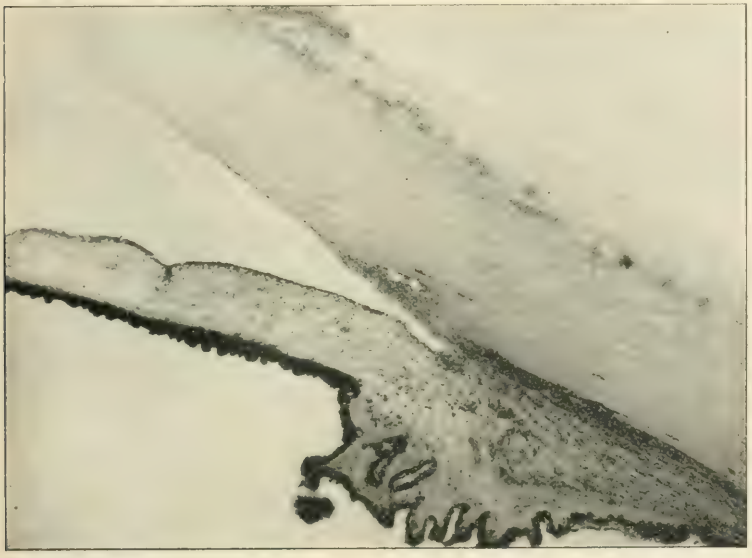

FIG. 2.

The angle of the anterior chamber on the nasal side, from a case of glaucoma following upon thrombosis of the central vein. It is almost free. An adhesion is just commencing to form between the root of the iris and the posterior surface of the cornea in the usual position, a short distance anterior to the actual angle.

the vitreous is altered. It becomes more abundant and also more colloidal, and is therefore less easily drained at the angle of the anterior chamber. The rise of tension is, therefore, in some sense analogous to that which occurs in serous iritis. A certain confirmation of this view seems to be furnished by the fact that in these cases the anterior chamber is not shallow as in ordinary primary glaucoma, but deep, or, at least, of normal depth. The confirmation is, however, more apparent than real, for the depth of the anterior chamber is never associated with a free angle. It is, however, true that the amount of occlusion at

the angle corresponds more or less to the duration of the glaucoma, and that in very early cases it may be occluded only on one side. A very curious point is, that it is practically always the temporal side which is first occluded, and until later stages, it is usually more widely occluded (FIGS 2 AND 3). There must be some explanation of this fact, but I am quite unable to offer any. It is not due to any normal difference in the breadth of the ciliary body or height of the ciliary processes on the two sides, as I have proved by taking the average of a series of sections from a normal globe. Moreover, I have not been able to show that

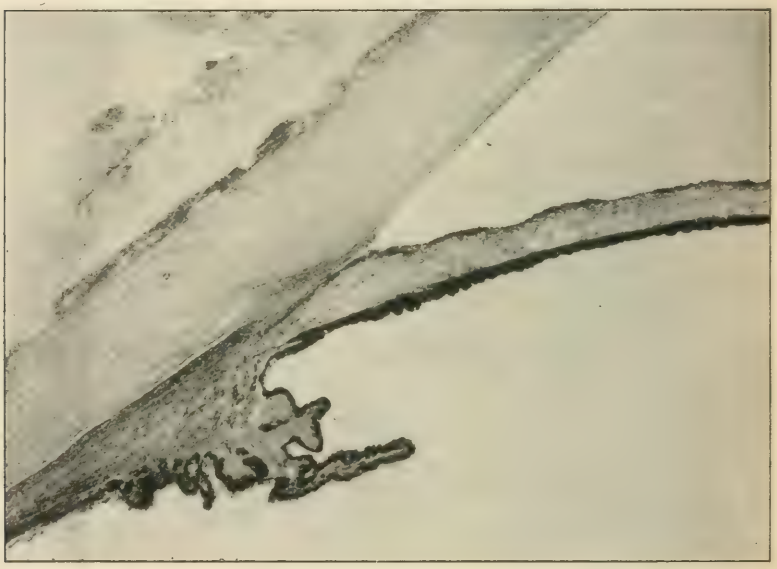

FIG. 3.

The angle of the anterior chamber on the temporal side, from the same case (same section). There is a wide adhesion between the root of the iris and the posterior surface of the cornea.

these eyes belonged to the type structurally predisposed to glaucoma. In particular, the diameter of the lens came out rather below than above the average.

The theory of altered lymph circulation, therefore, seems to be, on the whole, the most probable. Yet there are objections to it also. An increased quantity of lymph thrown into the vitreous should make the anterior chamber shallow, but in reality in most cases it is of normal depth. On the other hand, if it is chiefly a question of the quality of the lymph to be drained off through the normal angle, it is difficult to

see why the periphery of the iris becomes adherent to the back of the cornea, for actual inflammatory changes are usually absent.

One practical lesson is to be drawn from the liability of eyes with thrombosis to be attacked by glaucoma. When a diagnosis of thrombosis has been made no mydriatic should ever be employed subsequently. I know of four cases in which glaucoma apparently followed directly upon the use of mydriatics. In one instance homatropin was used for purposes of diagnosis, and glaucoma occurred while the patient was waiting for ophthalmoscopic examination.

A few details as to the history of the thrombus itself may be of interest. For reasons which are only partially understood, it is always deposited within, or a short distance behind, the lamina cribrosa. It is curious that exactly the same spot is the seat of election for pathological processes in the artery. Among the reasons which have been given may be mentioned the narrowing of the vessels as they pass through the lamina, the denser connective tissue around them, the greater rigidity of the porus opticus as compared with the dural sheath further back, and its smaller adaptability owing to the cessation of the vaginal space. In addition, there is probably a certain drag upon the point of junction of the nerve with the globe during ocular movements (Haab). In the case of the artery, also, the blood current is coming to a point of bifurcation, and is meeting the intraocular pressure.

When laid down, the thrombus does not long remain unaltered. The blood corpuscles speedily break down and cellular invasion occurs. At first, these cells are derived from the endothelium, later it is probable that the connective tissue of the wall bears a part. The result is organisation with its usual consequence—cicatricial contraction. For a considerable time after the occurrence of thrombosis the lumen will be found occluded by a cellular plug. Later, this shrinks almost to nothing and the vein may wholly disappear for a space. This, however, is not always what happens. In some instances canalisation occurs, and a very considerable current may be restored. In any case the vein never remains occluded for a very long distance—seldom more than a millimetre or so. Venous branches from the surrounding trabeculæ soon plunge into the occluding mass and restore a lumen. If the collateral branch is large, the vein becomes normal almost at once. More usually only small twigs enter, and the vein remains thick walled and with a small lumen for some distance.

It will be seen, therefore, that it is a mistake to regard the vein as a pure end vein—a vein for the obstruction of which

there is no compensatory mechanism. In addition to the canalisation and collateral circulation which occur in the nerve itself, a small collateral circulation is formed by enlargement of the small twigs normally connecting the central vessels on the papilla with the choroidal vessels. It is the enlargement of this anastomosis which gives the little tortuous nets so often seen round the edge of the papilla in old thrombosis cases. Unfortunately these collateral circulations are set up too late and are too scanty, in most instances, to prevent profuse hæmorrhages and destruction of the retina, so that clinically the central vein remains an end vein. But I have once seen a typical case in which the hæmorrhages all cleared up and a final vision of 6/6 resulted, showing that in young and otherwise healthy persons the collateral circulation may be sufficient to save the sight.

In certain rare instances the obstruction of the vein seems to be produced, not by thrombosis, but by primary disease of the vein wall, a process analagous to endarteritis in the artery. In this case a minute blood-filled lumen may be found surrounded by laminated layers of proliferated endothelium. This probably accounts for some cases in which loss of vision is gradual, not sudden as usual.

Obstruction of the central artery is a much rarer disease clinically than thrombosis of the vein, and the material is seldom obtained for pathological examination, because it does not usually lead to loss of the eye. I use the term "obstruction" in place of the commoner one "embolism," because there can be no doubt that many, perhaps most, of these cases are not due to an embolus, but to endarteritis or thrombosis or—most commonly of all—to a combination of these two. This was shown long ago by Loring, Nettleship, and Priestley Smith, who pointed out that many cases have prodromal obscurations lasting even for years before the final loss of sight. It is obviously difficult to believe that large numbers of emboli could chance to enter the central artery, and that if they did, the blindness would be temporary, not permanent. Priestley Smith reported a case in which the obscurations were always associated with faintings due to painful vaginal douchings for ovarian disease. One eye had already become permanently blind, but on discontinuing the douchings and removing the offending ovaries, the obscurations ceased permanently. In this case there can be no doubt that Priestley Smith's explanation is the correct one: the obscurations were due to defective cerebral and ocular circulation, and the permanent blindness to thrombosis of the central artery.

Moreover, it has been shown that in between 60 % and 70 % of cases no cardiac disease or other source of embolism can be proved. In addition, embolism is an improbable, and

thombosis a probable, explanation of cases in which both eyes become affected simultaneously or nearly so.

But the matter does not rest upon conjecture. Both endarteritis and thrombosis have been proved pathologically; indeed, some authors go so far as to state that all cases are of this nature, and that true embolism has never been proved to occur. This is certainly to err on the other side. There are, for instance, cases in which obstruction of the central artery has occurred simultaneously with embolism of cerebral vessels of the same side. These can only be explained with any degree of probability by the scattering of the pieces of an embolus which has entered the internal carotid artery. Some of the cases microscopically examined seem to me to have been undoubtedly true emboli. I will show some sections illustrating this.* I owe the material to the kindness of Mr. R. W. Doyne. They show a calcareous mass distending the central artery within the lamina cribrosa. Although blindness had been present for over three years, there is not the slightest trace of organisation or shrinkage. The mass has a vitreous fracture, and exhibits no structure. Except at this one spot both the artery and vein were greatly collapsed. The woman had no prodromal obscurations, and had double mitral disease and aortic regurgitation. In this case there can be no reasonable doubt that the mass shown is a true embolus, probably a piece of calcareous cardiac valve.

The other case which I show forms an excellent contrast to the last. I owe the material to Mr. A. Poulett Wells. Obstruction of the superior temporal artery, with beading of the blood column, etc., occurred in the right eye of a gentleman who suffered from diabetes. A corresponding sector was lost from the field of vision, but the central stem was not blocked. Within the lamina cribrosa, the outer coats of the artery are intact, but a nodule of endarteritis springs into, and almost occludes, the lumen. It is composed of the pale blown out cells of which I spoke when dealing with the subject of endarteritis in general. In its deepest layers there are calcareous deposits, showing that it is of old standing. The lumen is reduced to a minute slit at one side. Almost all the retinal vessels showed advanced disease of the same type, but only the superior temporal was completely blocked. It is easy to understand what happened in this case. The nodule in the central artery was the real cause of the branch obstruction. The current must have been greatly diminished and slowed, so that it finally came to a standstill in the superior temporal artery, which was, no doubt, itself much diseased. It will be evident how readily a slight fall in the general blood pressure might have

* See *Royal London Ophth. Hosp. Reports*, Vol. XVI, p. 262.

caused cessation of flow in the central artery. If the pressure had soon risen again the flow would have been re-established, and a typical prodromal obscuration would have been produced. If, on the other hand, it had remained low, thrombosis would have occurred, and total permanent blindness, with the typical picture of "embolism" of the central artery, would have resulted.

In speaking of thrombosis of the central vein, I showed that a scanty and insufficient collateral circulation occurs. There can be little doubt that the same thing happens in the case of the artery. After obstruction of the artery the retinal vessels are only empty for a short time. Although they remain small, and although function is not usually restored, they always refill, and this may take place much sooner than can be accounted for by the occurrence of canalisation in the obstruction. Moreover, in some rare cases little capillary nets are formed around the papilla; similar to those more commonly seen in thrombosis of the vein. These represent collateral enlargements of the fine anastomoses normally present in this situation. Small hæmorrhages are sometimes found in the same situation, and probably represent rupture of minute vessels under the strain of collateral enlargement. But the best evidence is afforded by cases in which the nerve is divided in the removal of retrobulbar tumours, with preservation of the globe. Even in these cases the vessels refill, and as the vein is also divided the refilling cannot be due to recurrent flow. In one instance, reported by Schlodtmann, the retinal vessels were found to be of normal size on the evening of operation. Examination of the tumour removed showed that the central vessels were already occluded by the growth. The collateral circulation must therefore have been fully prepared before the operation. It will be readily understood that the collateral circulation is less complete in cases of obstruction as ordinarily observed, because the block is usually sudden, and in many instances the vessels on which the collateral circulation would depend are themselves diseased.

In the foregoing I have repeatedly mentioned the subject of collateral circulation on occlusion of the central vessels. I should like, in conclusion, to make a few general remarks on the subject of the anastomoses about the nerve head and their clinical significance. These anastomoses are of two kinds. In the scleral part of the porus opticus there is a circle of arteries which communicates by small branches with twigs from the central artery. This is the circulus of Zinn and has no corresponding veins. It probably has influence in some cases of arterial obstruction where the obstruction is fairly far back, but it will have no influence on the veins.

Further forward, at the level of the choroid, there are other

minute anastomoses which *have* corresponding veins. These run from the choroid in three directions: (1) forwards, to aid in vascularising the papilla, (2) straight inwards to the region of the lamina, and (3) backwards up the pial sheath. In each case they anastomose with minute branches from the central vessels. An abnormally large branch of the first set is a cilio-retinal artery or vein, and pathologically the anastomosis may enlarge in cases of venous obstruction to form little nets around the margin of the disc. An abnormally large member of the second constitutes the rare condition known as an optico-ciliary vein ; a large vessel in the substance of the papilla running out from a central vessel and disappearing into the choroid at the edge of the disc. This is probably usually a congenital abnormality, but may undoubtedly develop during a papillitis and disappear afterwards. Enlargement of the third set is probably the cause of chorio-vaginal or posterior vortex veins—large venous trunks which run from the choroid to the edge of the disc and disappear there.* They usually occur in highly myopic eyes, and are probably due to stretching and atrophy of the choroid, which makes the passage of blood from the posterior pole to the ordinary venous channels—the vortex veins—more difficult. Hence, the small normal anastomoses between the choroidal and pial sheath vessels become enlarged. It is probable also that a similar enlargement may occur as a congenital peculiarity, and this may account for cases which occur in emmetropic and hypermetropic eyes.

In these remarks I have only sketched the features of a single division of the subject of intraocular vascular disease, in which I have myself worked. I have been obliged to omit all reference to choroidal vascular disease. Vascular changes in the anterior segment of the eye must also be of much importance and may some day throw light on the subject of glaucoma ; but comparatively little is known of their effects, and this, with the limited time at my disposal, must constitute my excuse for not speaking of them further.

* For details see *Ophthalmic Review*, April, 1906, p. 99.

CLINICAL, PATHOLOGICAL, AND THERAPEUTICAL MEMORANDA.

A NOTE ON THE PREPARATION OF YELLOW MERCURIC OXIDE OINTMENT.

BY

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LONDON, ENGLAND.

Unguentum hydrargyri oxidi flavi, commonly known as Pagenstecher's ointment, is so largely used in ophthalmic treatment that the various methods for its preparation seemed worthy of careful investigation. Experiments have been devised:—(i) with a view to making the yellow oxide of mercury in the form of an impalpable powder free from hard particles and grit, and (ii) the determination of the best ointment basis for suspending the mercurial.

(i) **Preparation of Yellow Mercuric Oxide.**—The yellow mercuric oxide, as directed in the British Pharmacopœia, is prepared by interaction of mercuric chloride and sodium hydroxide. (Dilute solutions are essential, and the soda solution is to be added to that of the mercuric chloride.)

The precipitation of a boiling solution of mercuric chloride with a dilute solution of potassium carbonate has been recommended. The precipitated yellow mercuric oxide is washed by decantation until the washings do not react with either silver nitrate or phenolphthalein, indicating respectively freedom from the resulting potassium chloride and excess of alkali.

By proceeding on either of the above lines an impalpable powder is produced. The second method is, in our experience, not so satisfactory as the first.

(ii) **The Ointment Basis.**—As to the various bases for suspending the powder thus produced to make an ointment suitable for ophthalmic use, we have the following:—1. Yellow soft paraffin; 2. White soft paraffin; 3. The admixture of an organic ointment base, *e.g.*, wool fat or castor oil, to render the ointment more readily absorbed.

Taking these in order we may say at once that we do not find anything more satisfactory than the yellow soft paraffin ordered in the British Pharmacopœia. A suggestion has been made (*Pharmaceutical Journal*, Vol. II, 1904, p 609) to boil the soft paraffin with potassium permanganate solution in order to oxidize any possible organic contamination.

Some experiments were conducted with a view to finding out to what extent paraffinum molle is contaminated with

organic matter, by boiling in this manner with a standard solution of potassium permanganate. The method is, however, inapplicable for accurate work.

In view of the elaborate process of refining which paraffinum molle undergoes to bring it up to B.P. standard, it is difficult to know exactly what the "organic matter" may be. The B.P. requires free solubility in ether, chloroform, and benzol, and tests carefully for absence of fixed oils, fats, and resin, by treating with a boiling solution of sodium hydroxide, which on acidifying should yield no precipitate or oily matter.

A simple test (which is not included in the B.P. under paraffinum molle, but nevertheless mentioned under paraffinum liquidum [*Off.*] and which is official in P.G. for paraffinum liquidum and paraffinum solidum) will point to any contamination with dust or dirt, *e.g.*, arising from careless packing: place a small quantity of the soft paraffin in contact with a little warm strong sulphuric acid, and note any appreciable darkening in colour. In the case of paraffinum molle warming is hardly necessary. The white variety stands the test better than the other.

The white soft paraffin is somewhat erroneously objected to by certain oculists, as being possibly contaminated with acidity left over from the treatment of the yellow soft paraffin. But it should be realised that in the manufacturing the initial bleaching with acid is followed by a neutralising with alkali and a final filtration through charcoal, and that the B.P. carefully excludes the possibility of both acid and alkaline contamination, by requiring that soft paraffin, either white or yellow, shall be free from acidity or alkalinity. Considering the fact that the yellow soft paraffin is half the price of the white, there seems no reason why considerations of economy should not have weight in the selection of a suitable basis for the "yellow ointment." As to the introduction of organic bases, such as those already referred to, this seems to us in reality unnecessary, having regard to their proneness to become rancid.

The United States Pharmacopœia adopts a very useful plan to assist in producing a smooth ointment. It gives the composition:—Yellow mercuric oxide, 1; water, 1; hydrous wool fat, 4; petrolatum, 4; and directs that the yellow mercuric oxide be triturated with the water until the mixture is perfectly smooth—the hydrous wool fat is then added in divided portions, and the petrolatum thoroughly incorporated. (A similar method is also employed for red mercuric oxide ointment, U.S.)

Pinchbeck, who has been over much of this ground (*Pharmaceutical Journal*, Vol. II, 1905, 359), proposes a basis of anhydrous wool fat 10, and spermaceti ointment (without benzoin) or white paraffin to 100.

It may be mentioned here that the use of castor oil, 5% in ointments, is suggested (see *Pharmaceutical Journal*, Vol. II., 1905, p. 553), *e.g.*, in the case of the red mercuric oxide ointment. The red mercuric oxide is triturated in a mortar with castor oil until a perfectly smooth mixture results, the petrolatum being gradually added in portions. The ointment is covered with about an inch of water to keep the air away. A jar of ointment made in this manner remained perfectly good for a year.

Conclusion.

We recommend the yellow mercuric oxide to be freshly precipitated (this was Pagenstecher's original intention, *cf. Pharmaceutical Journal*, Vol. II., 1905, p. 359) and converted into ointment without preliminary drying. This can be effected by taking the equivalent of mercuric chloride to start with. Supposing we wish to manufacture 10 lbs. of the ointment of 10% strength. Now 214·68 parts of HgO are produced from 269·18 of HgCl therefore $\frac{2}{2}\frac{6}{1}\frac{9}{1}\cdot\frac{1}{0}\frac{8}{8}=1\cdot254$ lbs. of corrosive sublimate will produce 1 lb. of yellow mercuric oxide on precipitation, as directed, with sodium hydroxide. This is carefully washed and pressed in suitable linen free from 'fluff,' and finally in this moist condition is made up to 10 lbs. with paraffinum molle. The amount of moisture in the precipitate is easily ascertained and is reducible, by pressing, to a very small amount. Weaker strengths can then be prepared from this 10% bulk, as desired, by dilution with paraffinum molle.

If kept exposed to light, yellow ointment may on long exposure turn dark on the surface. If desired, the ointment may be kept under water, or be placed into small collapsible tubes. We have examined the contents of such tubes two years after preparation, and find the same in good condition.

The ointment is usually manufactured in strengths of yellow oxide as follows:—1 25%, 2·5%, 4%, 5%, 8% and 10%.

A CASE OF CYCLITIS RELIEVED BY DIONIN.

BY

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In February, 1906, I was asked to see a lady at a distant town who was suffering from cyclitis. The medical man who had been attending her informed me that the patient had began to complain of pain in the left eye ten days ago. He had found the iris normal as regards appearance and mobility, but there

was much circumcorneal injection and photophobia. He had also detected keratitis punctata. He had prescribed atropine in 1% solution, with hot fomentations to the eye. This treatment had not had much effect—in fact the pain was often worse after the atropine had been instilled. Salicylate of soda had been freely given. When I first saw the patient, I found the following condition :—left eyelids somewhat swollen and red, slight but distinct chemosis of the conjunctiva, well marked circumcorneal injection, pupil fully dilated. Ophthalmoscopic examination showed that the media were clear and the fundus was normal. Eye tender to the touch. T. + ½. There was keratitis punctata, of the "mutton fat" type, on the lower half of the cornea. Patient complained of great pain, and there was much photophobia. As far as could be then ascertained, the vision was little if at all impaired.

An examination of the mouth showed that nearly all the teeth were loose, as the result of a chronic pyo-alveolitis.

I personally instilled atropine (1%) into the eye, and, after an hour, the tension was certainly no lower, and the pain as great.

I recommended that dionine in 5% solution should be instilled into the eye once a day, and that a 1% solution combined with 1% atropine should be used three times a day..

Two days later I received a letter from the medical attendant in which he said "the effect of the dionine has been magical." After the first application, the pain left permanently and the symptoms rapidly subsided. The 1% solution was used for a week, when the disease appeared to have come to an end. In March, 1906, I again saw the patient. I then found both eyes free from any kind of inflammation. T.n. in each, V.R. and L. as corrected=6/8. I advised her to have all her teeth removed, and this was done.

Since February there has been no return of the cyclitis.

Remarks.—In this case, which appeared to be one of pure cyclitis, accompanied by secondary glaucoma, atropine alone did not bring the disease to an end, but when combined with dionine, the effect was immediately apparent.

The cause of the cyclitis was almost certainly septic absorption from the mouth. The right eye was very slightly affected at the same time.

NOTES ON A CASE OF ACUTE SEROUS IRITIS WITH GLAUCOMATOUS SYMPTOMS: CURE BY DIONIN,

BY

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From time to time cases of acute iritis, generally of the serous variety, occur in which glaucomatous symptoms predominate. The difficulty in such an emergency rests in the treatment. To atropin attaches the danger of aggravating the glaucomatous symptoms; to eserin that of increasing posterior synechiæ. To escape this dilemma and to remove the fibrinous deposits which presumably block the channels of filtration, paracentesis of the anterior chamber suggests itself most readily. But the following experience taught me a further resource:

M. G., a married woman, of 45 years, came to the German Hospital, London, on August 17, 1906, complaining that the day before her right eye had begun to give her intense pain. It was found to be deeply injected; the cornea had a dull, stippled surface and the whole of the back seemed covered with a gray membrane, so that no details of the fundus were visible, and the iris could only be seen indistinctly. The pupil was dilated, but appeared to be round, and re-acted to light. The anterior chamber was, if anything, deeper than in the other eye. The tension was high (T. + 2) and sight reduced to fingers at 2 metres. A constitutional disorder to account for the ocular affection could not be ascertained. Paracentesis of the anterior chamber was proposed, but the patient would not remain in the hospital. Under the circumstances, I decided to try the effect of dionin, which under similar conditions I had so far only seen applied in combination with other drugs. A ten per cent solution was applied, which produced a severe chemosis. Soon afterwards, the eye became less painful, and the tension appeared slightly diminished, but this was not beyond doubt. The patient was sent home with a five per cent solution to be instilled three times a day. She was seen again three days later (August 20), when the eye was found to be pale, the tension normal, and V. $\frac{6}{12}$. The surface of the cornea was smooth, and the former membrane resolved into numerous round spots. They decreased speedily under the same treatment, so that on 31 August, only two deposits were left on Descemet's membrane; there was besides some brown pigment on the anterior lens capsule. The pupil was still slightly dilated and not perfectly round in consequence of a small posterior synechia, V. $\frac{6}{6}$. The patient was seen the

last time on September 13., the last deposits on Descemet's membrane had then disappeared, and, apart from traces of brown pigment on the lens capsule and synechia, the eye was normal in function and appearance. The use of dionin with a view of promoting the absorption of pathological substances in the anterior chamber, is indicated also by experiments on animals.

Axenfeld* injected an emulsion of Indian ink into both anterior chambers of a dog, and found that in the eye treated with dionin the ink had disappeared in two or three weeks, while only little absorption had taken place in the other eye which had been left untreated.

Probably cases showing an intense chemosis at the first application of dionin hold out the best prospects.

DIPLOPIA ARTEFACTA.

" At si forte oculo manus uni subdita subter
Pressit eum, quodam sensa fit uti videantur
Omnia, quæ tuimur, fieri tum bind tuendo,
Bina lucernarum florentia lumina flammis,
Bina que per totas ædes geminare supellex,
Et duplices hominum facies, et corpora bina."
(" *Lucretius*," Liber IV, 450).

GEORGE PERNET.

TRANSLATION.

(*From the University Eye Klinik of Graz.—Director*: PROF. DIMMER.)

CONGESTION HYPERÆMIA IN EYE WORK.

(Preliminary Communication).†

BY

DR. ROBERT HESSE, Assistant in the Klinik.

The method of congestion in the treatment of disease, introduced by Bier, has triumphantly gained admittance into nearly every department of medicine, and won adherents everywhere, except in ophthalmology.

**Deutsche medizinische Wochenschrift*, 1905, No. 47.

†Translated from the *Centralblatt für praktische Augenheilkunde*, Juni, 1906.

Attempts have not been lacking to make hyperæmia serviceable in this department of medicine. Thus, in the *Münchener med. Wochenschrift*, 1906, No. 2, there is a communication† by Renner, of Munich, who has undertaken experiments to cause hyperæmia in the eye and its adnexa by placing an elastic band around the neck, and has proved the influence which this congestion has upon various diseases of the eye. According to his observations, this method of treatment had a favourable influence in keratitis parenchymatosa, in so far as the clearing of the cornea appeared to progress more quickly of itself; in ulcus serpens, also (with a mixed therapy, it is true) a more favourable course could be recognized; while eczematous and catarrhal ulcers, as well as older corneal opacities, remained uninfluenced.

The way which Renner has chosen for the production of hyperæmia does not appear to me to answer all the requirements to which one is accustomed in a rational method of treatment. In order that a remedy may bring about the desired effect, it must be applied directly to the diseased part, and the strength of its action be regulated as closely as possible.

In Renner's method localization is lacking, and the "dosage," so to speak, is even more difficult, because with the eyes so many other parts are congested, which really should be quite outside the region of the therapeutic action to which, indeed, they certainly cannot be indifferent. In order to cause the desired degree of hyperæmia, the constriction of the neck must be so intense that undesirable collateral effects, also indicated by Renner, may easily occur.

We must therefore endeavour to find a means to permit us to localize as well as to regulate the action and degree of the hyperæmia.

The remedy presents nothing new. As in inflammatory diseases we employ suction on the trunk, where a simple constriction above the infected spot is impossible, it appears natural to apply the same method of causing hyperæmia in eye work. To this end I use a kind of cupping-glass apparatus of about 30 ccm. capacity. The free opening must be made to correspond with the contour of the parts around the eye. It is therefore an oval of which the longer horizontal diameter, of about 33-35 mm., corresponds to the length of the palpebral fissure, which it must entirely cover. The shorter perpendicular is adapted to the height of the orbit and measures about 28-30 mm. Naturally, attention must be given to the conformation of the eye, whatever it may be. The mouth of the

* For abstract see p. 652 of the present number of THE OPHTHALMOSCOPE.

cup should not be straight, but slightly curved in the horizontal diameter. To the insertion of the cup is attached a strong rubber tube about 30 cm. long, which ends in a bulb of a capacity of about 50 ccm. (*).

For the production of the action desired a pressure of 20-50 mm. mercury is necessary, which can easily be obtained by this arrangement. Conjunctival bleeding from my own eye was produced under a pressure of 100 mm. mercury. The rarefaction of the air may be measured exactly by means of a manometer consisting of a T-shaped tube. The above rarefaction was used in the experiments which follow. The cup was placed sometimes upon the opened and sometimes upon the closed lids.

When the lids were closed the skin became markedly congested and somewhat œdematous after five minutes, while after about half-an-hour it was livid, and the œdema had increased. On account of this swelling the lid edges became slightly everted, bulging, and reddened. The influence upon the deeper parts was very slight.

It is easy to place the cup so that the palpebral fissure cannot be closed during the suction. The action is then a different one. The same changes are to be seen upon the lids so far as they are in the sphere of congestion, but now the deeper parts of the eye participate.

Thus, the conjunctiva of the lids becomes markedly injected, swollen, and often quite everted by the bulging of the lids, so that their conjunctiva is directly exposed to the suction; then also the changes mentioned above are especially marked. There appears, first, a dilatation of the vessels upon the conjunctiva bulbi; then, from the culs-de-sac on, a serous fluid begins to collect under the conjunctiva, which, after half-an-hour's action (of the suction) advances to the edge of the cornea and shows the picture of a severe chemosis. The cornea, also, does not remain unchanged, for the influence of the increased moisture is noticeable upon it: it appears œdematous and its surface slightly dull.

I could demonstrate no visible changes upon the human iris, but upon that of the rabbit I saw the pupil become distinctly smaller, and the structure appear somewhat washed out (faded?), which might, indeed, be the expression of an increase of volume through an overplus of fluid. Microscopical investigations, including those of the corneal changes, are in progress and will explain the appearances. The fact that the deep vascular system becomes influenced, together with the anterior ciliary

(*) Naturally, a sucking-pump may be used in place of the bulb.

vessels, proves that distinct ciliary injection has come about in nearly all the cases observed. In the lens, the vitreous body, and in the retina no changes could be found, while there was no noticeable change of the intraocular tension.

As a complement to these experiments upon *normal* eyes, I exposed some *diseased* eyes also to the suction, not with any therapeutic result in view, but specially in order to observe the behaviour of the pathological vessel formation—before all in pannus eczematosus. In this increased filling of the vessels harmonized with the resulting succulence of the tissues. The capillary loops, also, in spots where no vessels entered the cornea, showed increased filling every time the limbus was swollen.

Secondly, the action upon deep vessels (keratitis parenchymatosa) was successfully tested, for there also a suction lasting thirty minutes called forth a distinct influx of blood.

Finally, experiments upon animals (rabbits) were carried out in order to show the action upon the ciliary vessel system. For this purpose a rabbit was subcutaneously injected with ½ ccm. of a 1% fluorescein solution, after which suction was applied to the left eye. After about three-quarters of an hour the green colouring of the aqueous humour and the cornea of that eye was quite distinct, while even after one hour, no trace of it was to be seen upon the right eye. Further experiments on this point, as well as on the action upon the deeper parts, lens, vitreous body, and fundus, I reserve for subsequent report.

If we now draw deductions from these observations and attempt to set bounds to the utility of the new method, it follows that it deserves to be tested in many inflammatory diseases.

Naturally, I first of all put into this class abscesses, furuncles, etc., about the lids or their surroundings, and—with or without incision—dacryocystitis also. Experiments must show how far blennorrhœa of the lacrymal sac is influenced. The most extended use of suction may, however, be found in all inflammatory diseases of the lid-edges, conjunctiva, and cornea: thus, in hordeolum and in ciliary blepharitis, cases of suppurating glands or hair follicles, in the different forms of conjunctivitis, and, before all, in my opinion, in conjunctivitis—eczematosa and trachomatosa.

With regard to corneal diseases: the ulcer, above all, is helped; likewise the clearing-up of pannus, or keratitis parenchymatosa, in the latter of which vessel-formation is indeed to be regarded as a healing process.

The action upon the ciliary vessels, and the increased discharge into the anterior chamber, do not permit the exclusion of the idea that deep inflammation also, such as iritis and cyclitis, may not remain uninfluenced. Naturally, it is not possible

to judge a method of cure definitely by theoretical consideration only, for clinical trials must be made, and to these I would urge my colleagues.

Finally, I may be permitted to report the therapeutic results obtained. I confine myself to the detailed description of a case of ulcus serpens, and will, in passing, just say that I have seen favourable results from the method in lid abscess, suppuration of the tear-sac, and hordeolum, which I do not regard, however, as anything very new or important.

On the 28th April, 1906, an old man, of sixty years, came into the out-patient department suffering from ulcus serpens. The ulcer had a diameter of about 3 mm., lay in the outer-upper quadrant, and showed outwards and upwards a progressive margin. Iritis, with hypopyon of about 1 mm., existed simultaneously. Cauterisation of the progressive margin was immediately resorted to, atropin, iodoform, and a sub-conjunctival salt injection were given, and warm moist applications during the day were ordered, since the patient declined to remain in hospital. On the following day the ulcer had pushed on towards the centre and had a broad progressive margin on the inner side. Cauterisation and the other measures were again resorted to. The following day showed a similar condition. The ulcer had progressed inwards and upwards and had increased on its whole inner side: it thus already extended over the pupillary region, leaving only the inner and lower edge of the cornea free. The hypopyon had reached a height of 2-3 mm. I now abandoned all therapeutic measures, with the exception of atropin for dilating the pupil, and proceeded to suction hyperæmia, at first with caution, daily twice for five minutes at a time. The cornea was already so attenuated that the centre of the ulcer bulged forward like a keratocele and threatened to break down. The result was striking. The pain ceased, the progressive ulcer had nearly completely disappeared upon the second day, the hypopyon was resorbed, and nowhere was an increase in the process to be observed. After six days the suction was stopped once by way of an experiment, and the conjunctival sac merely washed out with oxycyanate solution. Upon the next day the ulcer showed itself to be again progressive downwards and inwards. The congestion alone was now continued in increasing intensity until it was used twice daily for half-an-hour: the result was again that desired, since the ulcer came to a standstill, cleansed rapidly, and began to cicatrize, so that May 16th saw the congestion treatment abandoned, and yellow ointment used instead. The success of the treatment in this case was obvious. We must acknowledge that suction hyperæmia has advantages over other methods. The actual cautery,

which indeed plays the chief *rôle* in the treatment of ulcus serpens, always destroys a portion of the cornea which is not already spoilt by the disease and produces a thick cicatrix: this disadvantage might be remedied with the treatment described. I certainly do not conceal from myself the fact, that one case does not prove this point, and that extensive experiments must be made before the question can be regarded as finally decided. S. S.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new, or else do not lend themselves to abstract.

I.—PATHOLOGY.

(1) Cirincione.—Anatomical researches on the retinitis proliferans of Manz. (Ricerche anatomiche sulla retinite proliferante di Manz.) *La Clinica Oculistica*, Gennajo e Febbrajo, 1905.

(2) Harms, Clemens.—Anatomical researches on the vascular changes within the area of arteria and vena centralis retinæ and their consequences on the circulation, especially with regard to the so-called hæmorrhagic infarct of the retina. (Anatomische Untersuchungen ueber Geffässerkrankungen im Gebich der Arteria und Vena Centralis Retinæ und ihrer Folgen für die Zirculation mit besonderer Benicksichtigung des sog haemorrhagischen Infarktes der Netzhaut.) von Graefe's *Archiv f. Ophthalmolgie*, 61, i.; und 61, 2; 12 September, 1905: i. VIII, 1905.

(3) Van Duyse.—An epibulbar tumour with foam-like cells. (Tumeur épibulbaire à cellules écumeuses.) *Archives d'ophtalmologie*, septembre, 1905.

(4) Bartels, Martin.—On the blood-vessels of the eye in glaucoma, and glaucoma experimentally produced by obstructing the anterior blood-vessels of the eye. (Ueber Blutgefässe des Auges bei Glaukom und ueber experimentelles Glaukom durch Versperrung von vorderen Blutbahnen.) *Zeitschrift f. Augenh.*, August, September, Oktober, und November, 1905.

(5) Gendron and Servel.—A case of primary lympho-sarcoma of the orbital lacrymal gland, with histological examination. (Un cas de lympho-sarcome primitif de la glande lacrymale orbitaire, avec examen histologique.) *L'Ophtalmologie Provinciale*, août, 1905, and *Archives d'ophtalmologie*, septembre, 1905.

(6) Poulard.— Melano-sarcoma of the iris. (Mélano-sarcome de l'iris.) *Archives d'ophtalmologie*, septembre, 1905.

(7) Mayou, M. S.—Intradural tumour of the optic nerve (Neuro-Fibromatosus). *Royal London Ophthalmic Hospital Reports*, Vol. XVI, Part 2.

(8) Mayou, M. S.—Secondary tuberculosis of the iris with spontaneous rupture of the lens capsule. *Trans. Ophthalmological Society*, Vol. XXV (1905), p. 67.

(9) Polatti, A.—Cavernous (lacunar) atrophy of the optic nerve and dehiscence of the sclerotic in high myopia. (Kavernöse [lakunäre] Sehnervenatrophie und Dehiscenz der Sklera bei hochgradiger Myopie.) *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1906.

(10) v. Michel.—On the occurrence of amyloid in the eye-ball and in the ocular vessels. (Ueber das Vorkommen von Amyloid am Augapfel und an den Augengefässen.) *Zeitschrift f. Augenh.*, Januar, 1906.

(11) Ferentinos, Sp.—The nature of simple atrophy of the retina. *Ophth. Klinik*, März, 1906.

(1) **Prof. Cirincione** having had occasion to make a pathological examination of an eye, which had been affected with retinitis proliferans, gives, in a very elaborate article (with illustrations), a complete description of what takes place in the various tissues of the eye after this variety of retinitis. The length and detail of his publication, which is very interesting, cannot be reduced to a short abstract, and I therefore limit myself to giving only his conclusions, *viz.*:—

1. The singular characteristic appearance of the fundus in the retinitis of Manz is undoubtedly due to a newly-formed fibrous tissue which furrows the internal surface of the retina in the shape of more or less prominent cords projecting sometimes into the vitreous in the form of clubbed or membrane-like prolongations.

2. The newly-formed fibrous tissue is thickest at the optic

disc, and is exclusively confined to the central blood-vessels and their branches giving the characteristic appearance to the fundus in this disease.

3. The newly-formed fibrous tissue occupies the stratum of the optic fibres and ganglionic cells.

4. The central blood-vessels are sclerotic, both on the disc and on the retina, and their lumen is obliterated in various points. This sclerosis is found to diminish gradually towards the equator of the retina as well as towards the trunk of the optic nerve.

5. Small blood-vessels of new formation are to be found in the thickness of the retina underneath the newly-formed fibrous tissue.

6. The retina presents marked hypertrophy of its fibres, proliferation of neurolgia, and atrophy of its nervous elements.

7. The choroid and the optic nerve are the seat of atrophic degeneration.

8. The vitreous and the anterior segment of the eye present no alterations of consequence.

9. The intraocular hæmorrhages and glaucoma are secondary complicating symptoms independent of the retinitis of Manz, which is a local disease and not the result of general arteriosclerosis or blood changes.

10. The ethiological cause of this disease is to be looked for in the presence of irritating substances (chemical or toxic) in the vitreous humour which act principally on the connective sheath of the papillary blood-vessels. CHARLES MANCHÉ.

(2) Referring the reader to the original for details, the following conclusions to which **Harms** arrives, after extremely careful examination of a large number of specimens, may be quoted :—

1. The distinction between embolism of the central artery and thrombosis of the central vein cannot be retained, as both vessels are in all cases diseased, and the primary affection of either system may produce one or the other ophthalmoscopic appearance, according to its complication or otherwise with an affection of the other trunk.

2. The complete or nearly complete occlusion of both central vessels is caused by the intersection of the affected vessels upon each other. The primary sclerosis of a vessel which is not yet completely obstructed produces slowing-down of the circulation, especially if general or local contributory causes (weakness of heart-action, changed condition of blood, etc.) supervene. This leads to thrombosis, and this again to increase of the sclerotic process, which now goes on to complete blocking of the lumen.

3. Mostly the ramifications (arteries and veins respectively)

suffer before the other trunk becomes obstructed, but occasionally we find a kind of distance-action of one system on the other without affection of the connecting links.

4. The affection of the system, which is secondarily involved, may be clinically more marked, while the lesion of the other system is anatomically preponderating.

5. Simultaneous occlusion of both artery and vein by the same local process (thrombosis or proliferation of the retina) has not been hitherto proved (with one possible exception). It seems therefore likely that obstruction of both systems is due to the action of impaired circulation caused by primary affection of one system only.

6. The existence of genuine hæmorrhagic infarct—in the meaning of Sohnheim—has not been anatomically established. The ophthalmoscopic picture which has hitherto been described as hæmorrhagic infarct or post-anæmic hæmorrhage is really the expression of a combination of embolism of the central artery and thrombosis of the vein, in an anatomical as well as in a clinical respect. R. GRUBER.

(3) **Van Duyse** excised a supposed epibulbar lipo-dermoid from the eye of a child, aged 3 years. The tumour, which had existed for two years, was stated to have grown, at first slowly and then more quickly. The slightly lobulated mass was of pale yellowish colour, and extended from the upper and inner part of the conjunctival cul-de-sac over the surface of the sclera to encroach for about 2 mm. upon the cornea. The neoplasm was firmly adherent to the episcleral tissues. Measurements were: long diameter, 18 mm., and transverse diameter, 9 mm. The tumour, after removal, was fixed in Flemming's solution, embedded in paraffin, cut, and stained with safranine, van Gieson's liquid, and Heidenhain's iron hæmatoxylin. It was noted that Flemming's solution failed to turn the specimen black, thereby showing the absence of fat. The characteristic feature of the growth lay in the presence of spongy neoplastic cells, which occupied the entire thickness of the ocular conjunctiva. These cells, the so-called *cellules écumeuses*, or *Schaumzellen*, resembled those found in xanthoma of the ocular conjunctiva and of other parts. The elements were separated from one another by an intercellular stroma, and capillary blood vessels were present. The mass of the foam-like cells was marked off from the epithelium of the ocular conjunctiva by a layer of dermic tissue, carrying capillaries gorged with red blood cells, and staining well with fuchsine. Giant cells undergoing spongy changes were found in some of the sections. Van Duyse concludes that the tumour he describes was of mesodermic origin—an endothelioma, in fact, with foam-like hypertrophy of the protoplasm of the elements. It was, in other words,

xanthoma, less fatty infiltration. As regards the foam-like condition, the author offers two explanations, *viz.*, 1st—The alveoli were constituted by an accumulation of hyaline droplets in process of metamorphosis which is the expression of the endothelial cells, and so often noticed at the level of tumours of the conjunctiva. 2ndly—It was concerned with a form of degeneration analagous to parenchymatous degeneration or to cloudy swelling, a condition called by writers "hydropic," found in œdematous tissues, inflammatory deposits, and, above all, in carcinomata The introduction of liquid makes the contents appear clear; the protoplasmic grains are separated and crowded together towards the periphery; vacuoles are formed, corresponding to clear droplets. The nucleus shares this fate. Finally, cells and nuclei dissolve. The foam-like state, if it is comparable with the preceding modifications, is distinguished from the latter by the regular dimensions of the vacuoles. S. S.

(4) **Bartels** attempts to solve the essential nature of glaucoma by examining the condition of the blood-vessels, and comes to the following conclusions: disease of blood-vessels is very frequently present in glaucoma, mostly of the nature of arteriosclerosis, and presenting nothing specific or characteristic of glaucoma, and not sufficing to explain the increased tension.

There exists undoubtedly in glaucoma a primary change in the blood-vessels, of an inflammatory nature, but the relationship between the two is not clear.

In many cases there was found to co-exist in the same eye a narrowing of the intra-scleral portions of the anterior ciliary arteries and a dilatation of the posterior ciliary arteries.

It is possible, by obstructing the outflow from the eyeball, by severing the connections of the conjunctiva and muscles, to produce a long-lasting increase of tension with a normal angle in the anterior chamber. A. LEVY.

(5) A man of 18 years developed a growth in the region of the lacrymal gland. An exploratory puncture having yielded negative results, the tumour was removed by Krönlein's method, slightly modified. But the patient died, presumably from a metastasis at the base of the brain, about six months after the operation. Pathological examination: The tumour, encapsuled, measured 35 mm. by 29 mm. by 17 mm., and weighed 9 grammes. Microscopical examination of different parts of the growth showed that it was essentially in the nature of a globo-cellular sarcoma or of a lympho-sarcoma, developed at the expense of the internal aspect of the capsular conjunctiva, which in the normal state envelops the orbital lacrymal gland. S. S.

(6) **Poulard's** patient, a woman of 55 years, had a blackish growth, at least the size of the crystalline lens, occupying the

upper half of the anterior chamber of one eye. The eyeball was enucleated. Histological examination showed a sarcoma developed at the expense of the stroma of the iris, leaving intact the posterior epithelial surface of that structure. It was composed of fusiform cells, together with many pigmentary cells.

S. S.

(7) The patient was a girl, aged 5 years, who when first seen had right convergent strabismus, but there was some proptosis of the left eye and the vision was lost. The movements of the globe were unimpaired, and the pupil was inactive, except consensually. The optic disc was atrophied; the arteries were small and the veins considerably enlarged. The eye was more hypermetropic than the other.

On opening the orbit a hard rounded tumour could be felt wedged into the apex of the orbit. There was ½ cm. of free nerve between the globe and the tumour. With curved scissors the nerve was cut as close as possible to the optic foramen, and another cut freed it from the eyeball. The parts were then replaced. Enormous proptosis followed, which caused ulceration of the cornea, but this healed. At first there was complete ptosis, the cornea was anæsthetic and the movements of the globe were abolished. Most of these symptoms recovered to a certain extent.

The tumour was 2·5 cm. long and 1·8 cm. wide, of a fusiform shape, while the cranial end of the optic nerve measured double that of the part in front of the growth. It was situated entirely within the dural sheath. The long ciliary nerves and artery were spread out over its surface, and near its posterior extremity was a portion of the third nerve; as the posterior part of the growth was jammed into the apex of the orbit the cutting of these was inevitable. Microscopically the tumour was seen to be completely encapsuled by the sheath of dura mater, which was not infiltrated with the tumour although it was distended. The tumour consisted of two portions, the lower through which the nerve passed, and the upper which did not contain any portion of the optic nerve. These two were separated by a fine membrane probably derived from the pial sheath. The nerve fibres were much degenerated, although Marchi's method did not show it, probably due to the length of time the degeneration had been present (7 months). The blood vessels were scanty, but when present were well formed and usually had both endothelial and perithelial coverings. The paper is illustrated with eight photomicrographs illustrating the condition found.

C. D. M.

(8) A poorly-developed child of three years, suffering from tuberculous dactylitis, developed conglomerate tubercle of the

iris, on account of which the eye was enucleated. The pathological examination (undertaken by **Mayou**) showed, amongst other things, that the exudation in the iris contained a few giant-cells, but practically no epithelioid cells, and no tubercle bacilli. The upper part of the cornea was dimpled, by reason of the traction exercised by the cicatricial tissue that had formed in the iris, and for the same reason the anterior capsule of the lens had ruptured at about its centre. The retinal vessels were surrounded by masses of round cell exudation, considered by the author to be of tuberculous nature.

(9) **Polatti** gives a well-illustrated account of the anatomical examination of two highly myopic eyes (more than 30 D.). The two most important and unusual changes found were—first, such an extreme thinning of the sclerotic that its continuity was actually interrupted in several places; secondly, the optic nerves showed a partial but extensive atrophy, which was distinguished by the presence of numerous cavities and secondary proliferation of the glia. This type of optic atrophy has been found so far only in glaucoma (Schnabel), but, according to this experience of Polatti, it occurs evidently also in excessive myopia, independently of glaucoma. C. MARKUS.

(10) **v. Michel** recounts the case of a young man who died of contracted kidney, with amyloid disease, in whom, in addition to a widespread amyloid change all over the body, there was an amyloid endarteritis of the arteria centralis and its branches, as well as of the choroidal vessels and of the chorio-capillaris. v. Michel comments on the rarity of this occurrence, and divides amyloid disease of the eye into two groups—first, that in which it is local and limited to the eye, and, second, that where it is part of a general amyloid degeneration. It has been found as a local change in the cornea in scars, staphylomata, and has been produced, experimentally, in the vitreous in hæmorrhages, and in the retinal vessels in phthisis bulbi. When it occurs as part of general disease it is most frequent in the ciliary arteries and the chorio-capillaris. A. LEVY.

(11) By "simple atrophy of the retina" **Ferentinos** means retinitis pigmentosa. The paper begins with the statement that all writers are agreed that this condition is not an inflammatory one! We are afraid that this is not actually the case, much though we should like it to be otherwise. The object of the communication is to advance a theory as to the nature of the atrophy, and, briefly put, it is as follows:—the process is not a pathological, but a physiological one, and corresponds to that of the involution of the thymus and mammary glands. All the tissues of the body undergo this process sooner or later. The eyes of those persons in whom the atrophic

condition is found, are predestined to an early death, a premature process of involution. The latter begins first in the more highly developed cells. As these degenerate, and larger and larger portions of the retina cease their functions, the demand upon the blood supply decreases, and the vessels diminish in size. Since the vessels cannot do so at once, the connective tissue receives more than its ordinary share of nourishment, and hypertrophies. Later on it atrophies when the blood supply has diminished in proportion to the nervous elements that have degenerated, and by its contraction leads to further degeneration of the nervous cells. In this way a vicious circle is set up.

PERCIVAL J. HAY.

II.—ANÆSTHESIA IN EYE SURGERY.

Calderaro.—Anæsthesia in Ophthalmic Surgery. (Sulla anestesia in chirurgia oculare.) *La Clinica Oculistica*, June, 1906.

In this paper **Calderaro** discusses the question of the use of general and local anæsthetics in the practice of ophthalmic surgery, and, on the whole, agrees with the German school, which avoids general anæsthesia on all possible occasions. As regards local anæsthetics, he has found none equal to cocain.

Even in acute glaucoma, he has found it unnecessary to have recourse to general anæsthesia, but then he does not interfere in the acute stage, preceding iridectomy by the use of purges and myotics, and, if necessary, by corneal puncture. In cases where he has reason to expect hyperæsthesia of the iris, he instils a few drops of cocain after making the corneal section, and in this way obtains the required loss of sensation.

The large majority of operations on the adnexa are made possible by subcutaneous injection of cocain. Excision of the eye and of the lacrymal sac are easily performed after such preparation. When a general anæsthetic is required, nothing is so good for the ophthalmic surgeon as chloroform.

Calderaro has practically abandoned general anæsthesia, not for fear of the risk, but for the greater convenience of the patient and operator.

HAROLD GRIMSDALE.

III.—GLIOMA OF THE RETINA.

(1) **Rochon-Duvigneaud.—On the prognosis and treatment of glioma of the retina.** (Sur le prognostic et le traitement du gliome de la rétine.) *La Clinique Ophtalmologique*, 25 mars, 1906.

(2) **de Spéville.—Glioma of the retina of the left eye; enucleation; recovery.** (**Glioma de la rétine de l'œil gauche; enucléation; guérison.**) *La Clinique Ophtalmologique*, mars 25, 1906.

(1) This is an interesting and clearly put statement of the indications, according to the author's experience, for exenteration of the orbit as against simple enucleation in glioma. Briefly, **Rochon-Duvigneaud** says, that in all cases the parents' consent should be obtained in the first instance to an histologically complete intervention. After enucleation, the eye and optic nerve are to be carefully examined, as well as the orbital cavity. A sharply-cut section of the optic nerve immediately behind the eyeball will reveal the information sought, with considerable accuracy. If the nerve has preserved its white colour and normal volume the prognosis is good, and enucleation may suffice. If the nerve is small and atrophied, even though, it appear free from tumour tissue, the orbit should be cleared out. When the nerve is increased in size and lardaceous in appearance, or if it merely presents a grey core of infiltration, exenteration should be done without further delay. Other points taken up in this paper are the prognosis after operation—two years' freedom from recurrence is a safe period—and the contrast between the choroidal sarcoma and glioma of the retina, from the point of view of urgency of operation on the orbit. "It is quite exceptional to find the optic nerve invaded in examining enucleated sarcomatous eyes, and, if it is atrophied, this atrophy does not necessitate, as in glioma, exenteration of the orbit. Exenteration is only necessary if the sarcoma has issued from the eye at any point. . . . ." While glioma of the retina tends to invade the orbit and to spread locally, sarcoma has much less tendency to invade the orbit and a much greater tendency to spread by metastasis. Therefore there is great urgency in glioma. "I have the firm conviction that the great majority of gliomas, if taken to the operator early enough, can be definitely cured by immediate and histologically complete intervention." ERNEST THOMSON.

(2) **de Speville** relates a case where a glioma was seen very early and before central vision had become affected. The eye was enucleated (without interference with the other orbital contents), and the tumour found to be as yet confined to the retina. The child remained well seven years later. ERNEST THOMSON.

IV.—COUCHING OF THE CRYSTALLINE LENS.

Elliot, Major R. H.—On couching of the lens as practised by native practitioners in India. *Ind. Med. Gazette*, August, 1906.

Elliot gives his observation of the results of depression of the lens in 125 eyes by Mahomedan *vaithyans* in Southern India. The period which had elapsed since the operation varied from less than a month to ten years and over. There were 23·2 % successes, 8 % partial successes (counting fingers at 2 ft. or less), and 68·8 % failures. The chief cause of failure was septic inflammation of the uveal tract. This is not to be wondered at, considering that the operators use "a dirty needle or a sharp wooden skewer," and have no conception of asepsis or antisepsis. Of the total failures, 86 in number, 52 were accounted for by iritis and irido-cyclitis. It may be accepted that these losses could have been eliminated by careful asepsis. Of the remaining failures 17 were due to glaucoma and 13 to imperfect dislocation of the lens. Ten of the glaucomas—8% of the total operations—were apparently attributable to the operation. Though some of the ten cases were probably the result of irido-cyclitis, others were not to be thus explained. Elliot had looked in vain for any signs of the "slow and steady progressive degeneration of the vitreous and of the retina." mentioned by H. Smith in the *Trans. Ophth. Soc.*, 1904. He considers in detail Power's indications for depression as stated in the *Indian Medical Gazette* of May, 1905, but he does not specially consider the treatment of cases where the fellow eye has been lost by intra-ocular hæmorrhage complicating cataract extraction. He opposes Maynard's opinion that depression may be performed "under certain circumstances," and concludes "that to advocate couching under any circumstance would be to set the clock of progress back many decades."

H. H.

V.—THE EYE IN DEATH.

De Micas.—The eye in death: an ocular medico-legal study. (L'Œil dans la morte : étude de médecine légale oculaire.) *Recueil d'ophtalmologie*, août, 1906.

De Micas discusses this subject under three main heads:—(I) The thanatological eye; (II) the revealing eye; (III) the accusing eye.

(I) Under the title of *thanatological eye* are included those changes which take place in the eye and its adnexa after death. Approaching death is heralded by failing vision and suppression of tears resulting in dryness of cornea which may result in keratitis and ulceration from lagophthalmos. The lids at death are half-closed, as a rule, and the eye is turned upwards and outwards. Insensibility of the conjunctiva and cornea and dilatation and fixity of the pupil are important, although not conclusive, signs of death. Ophthalmoscopic examination, which is only feasible during the first few hours after death, shows disappearance of the papilla, absence of the blood-column in the retinal arteries, partial emptying of the retinal veins, and a grey discoloration of the choroid. The eye generally becomes flaccid, and if the lids remain open, the sclerotic becomes yellow and develops a bluish-black spot, which disappears with advancing putrefaction. According to Legrand, Purkinje's (*sic !*) images may be used to establish the existence of death. The third disappears firstly, then the second, and, lastly, the first. The two posterior images often disappear during the agony, later the first becomes ill-defined and ceases to be reflected 6 to 12 hours after death.

(II) The *revealing eye* may show evidence of medico-legal importance. The closed eyelids of a lady, supposed to have died alone, aroused the suspicion of the relatives, and eventually led to the arrest and confession by her cook, who had decamped with the securities.

The state of the lids after death is, however, by no means constant. Valude, in 100 cadavers examined 24 hours after death, found: 60 half-closed; 15 fully open; 12 with one eye closed and the other eye open; 7 closed. After a while those open or half-closed tend to become closed, but as the rate of closure is only 1 mm or 2 mm. a day, only those half-closed can become fully closed in the ordinary way.

In deaths resulting from somewhat prolonged illnesses, the state of the lids were as follows:—Tuberculosis: 25% open; 5% closed; the rest half-closed; Pneumonia, 95% closed.

Heart Disease.—The lids are generally closed owing to œdema, but in cases of syncope they are open. In infective endocarditis and purulent pericarditis the eyes are half-closed, as is the rule in infectious cases.

Kidney Diseases.—Lids half-closed, as in other intoxications, but where there is œdema of the lids, they are closed. The same applies to eclampsia.

Typhoid Fever.—When death is slow the eyes are half-closed, but when due to collapse or syncope they are open.

Cancer.—The eyes are open in 80% of deaths from cancer.

Nervous Diseases.—Whether death be sudden or slow in these cases the lids are seldom open. They are either partly open or firmly closed.

In cases of sudden death of people previously in apparent good health the eyes are closed unless there be an unrecognised old or chronic lesion when the eyes would be half-closed.

In death by violence the condition of the lids vary, *e.g.*, suicide by revolver shot, injury of the head is associated with two-thirds of the cases, probably because the suicide either voluntarily or instinctively shuts his eyes when he pulls the trigger.

The victims of assassination have their eyes open, as a rule, but deductions on these grounds are of little value, as the circumstances are so variable.

After death from hanging the eyes were found closed in 52%, half-closed in 32%, open in 16%.

After drowning the eyes are generally closed if the bodies are recovered early before putrefaction has set in.

Poisoning by charcoal fumes is associated with half-closed lids. In other forms of suffocation, *e.g.*, infants suffocated in bed, the eyes are closed. Poisons have varying effects on the condition of the lids after death.

(III) The *accusing eye.* Apart from abnormal position of the lids already noted, the condition of the eye is not likely to help in the elucidation of crime, There is no truth in the statement, occasionally made in the pages of fiction, that the eye of a victim retains the image of his murderer.

J. Jameson Evans.

VI.—THE ACTION OF ANILINE COLOURS UPON THE CONJUNCTIVA.

Vogt, Alfred.—Clinical and experimental researches on the action of artificial aniline colours upon the conjunctiva. (Recherches cliniques et expérimentales sur l'action des couleurs artificielles d'aniline sur la conjonctive.) *Archives d'ophtalmologie,* avril, 1906.

It is a matter of familiar knowledge that serious injury may follow the introduction of aniline colours, or of substances containing aniline, such as copying pencils, into the eye. Several such cases are on record in this country and elsewhere. The great modern development of the aniline industry has rendered these accidents commoner than was formerly the case, and has made it desirable that we should

possess precise information, both clinical and experimental, upon the subject. **Vogt**, assistant in the Basle *clinique*, has an elaborate article (translated from the German) in the *Archives d'Ophtalmologie* for April last, dealing with the action of various aniline colours upon the conjunctiva. As the result of experiments with seventy different colours, he has reached the following conclusions :— 1. The aniline colours affect the conjunctiva differently according to their chemical constitution. For example, the application to the conjunctiva of from 5 to 10 milligrammes of acid, neutral, or mordant colours, or of colours that are insoluble in water, produces little, if any, inflammation of the mucous membrane. 2. When an equal quantity of a basic colour is placed in the cul-de-sac, marked inflammation, which may even lead to panophthalmitis, is set up. The different basic colours act upon the conjunctiva with variable intensity. 3. Experiments on rabbits show that the action of even the most caustic basic colours may be neutralised or destroyed by irrigation of the conjunctival sac with a 5% solution of tannin. On the other hand, it is important to bear in mind that to flush the injured parts with water or with solutions of sodium chloride, boric acid, or sodium bicarbonate, is to do more harm than to leave the eye alone. S. S.

VII.—AFFECTIONS OF THE SKIN AND OF THE EYES.

(1) **Ischreyt.—Two cases of xeroderma pigmentosum with tumours of the eyelids.** (Zwei Falle von Xeroderma Pigmentosum mit Tumorbildung den Lidern.) *Zeitschr. f. Augenheilk.*, Juli, 1905.

(2) **Koerber.—A case of pemphigus of the conjunctiva.** (Ein Fall von Pemphigus der Bindehaut.) *Centralbl. f. prak. Augenh.*, Dezember, 1905.

(3) **Hilbert.—On conjunctivitis in erythromelalgia.** (Ueber eine Bindehautentzundug bei Erythromelalgie.) *Woch. f. Therapie und Hygiene des Auges*, 22 Marz, 1906.

(4) **Jacqueau, A.—Vaccine infection of the conjunctiva.** (Infection vaccinale de la conjonctive.) *La Clinique Ophtalmologique*, 10 juin, 1906.

(5) **Reis, Wilhelm.—Eye disease and erythema nodosum.** (Augenerkrankung und Erythema Nodosum.) *Klin. Monatsbl. f. Augenheilkunde*, September, 1906.

(1) **Ischreyt** describes two cases. The first in a boy of 10 years of age, who for eight years had pigmented spots on the skin of the face and eyelids. The eyes became bad and caused much trouble, vision being very much reduced, and latterly definite tumours have formed on the lids. Both corneæ show a pannus-like growth. The second case, in a boy of 13, is not so marked, and there is no definite tumour formation. The tumour, in the first case, was removed and proved to be a small-celled carcinoma. The author describes three stages in the progress of this disease—(1) Period of erythema and some discolouration. (2) The formation of teleangiectatic growths. (3) Formation of definite tumours. A. LEVY.

(2) **Koerber** records a rather mild case of pemphigus of the conjunctiva, the only unusual feature of which was commencement of the disease on the glans penis where the resulting ulcer was mistaken for a syphilitic chancre and treated as such. Later, the conjunctivæ and the palate were attacked and the shrinkage of the conjunctiva cleared up the nature of the case, showing it to be really one of pemphigus. At no time were any secondary syphilitic signs present. A. LEVY.

(3) **Hilbert** describes a case which he believes is unique. A delicate anæmic woman of 45 years was found by him acutely ill with severe pains in the limbs, pain in the eyes, and lacrymation. The eyelids on both sides were blue-red in colour and were so swollen and hard that the upper lids could not be everted; pain was present both to touch and spontaneously. The conjunctivæ of the lower lids were intensely red, swollen, and velvety. There was only trifling injection of the bulbar conjunctiva, and no photophobia. In addition, the terminal phalanges of the fingers and toes were blue-red in colour and very painful. The diagnosis was erythromelalgia, and the question arose whether the eye symptoms were an accidental complication, or whether they formed part of the general disease. After summing up the matter, Hilbert concludes that this unusual conjunctival catarrh was a rare manifestation of the angioneurosis. All the symptoms disappeared in fourteen days by application of cold locally and the internal administration of syrup of iodide of iron. ERNEST THOMSON.

(4) **Jacqueau** relates in full a case of accidental infection of the conjunctiva of the mother from the arm of the child. The diagnosis was made by exclusion, namely, an intensely acute conjunctival inflammation, with glandular involvement, which runs a benign course, no other known source of infection, and no bacteriological evidence pointing to any other source.

ERNEST THOMSON.

(5) The case reported by **Reis** is remarkable in many

respects. A man aged 34, suffered from bilateral cyclitis, which, in the course of several months, showed frequent aggravations and relapses. The symptoms consisted chiefly in ciliary irritation, hypopyon, and exudation in the vitreous, while the iris played a less prominent part in the disease. On the other hand, one optic nerve were completely atrophied. No constitutional cause was ascertained for a long time. But four months after the onset of the eye-affection the patient was seized with fever, and changes characteristic of erythema nodosum appeared in the skin of both legs. A few days later nearly the whole iris of the right eye was seen to be covered with hæmorrhages, which, however, became rapidly absorbed. A posterior cortical cataract occurred in this eye about the same time, and, strikingly enough, disappeared in the course of a few weeks. The optic atrophy is thought by Reis to be most likely due to an infectious optic neuritis dependent upon the general disease; but the possibility of hæmorrhage in the optic nerve sheath is also considered. A special and also a general deduction follow from the author's interpretation of his case. Erythema nodosum is to be included in the constitutional causes of irido-cyclitis; and a severe uveitis may be the early and even the sole symptom of a general infectious disease. C. MARKUS.

VIII.—GONORRHŒAL AFFECTIONS OF THE EYE.

(1) **Baylac, D.—Double iritis in a case of gonorrhœa.** (Iritis double dans un cas d'infection blennorragique.) *La Clinique Ophtalmologique*, 25 mars, 1905.

(2) **Gendron.—Relapsing gonorrhœal iritis.** (L'iritis blennorrhagique à rechutes.) *L'Ophtalmologie Provinciale*, T. I, p. 4, avril 1905.

(3) **Galezowski.—Gonorrhœal irido-choroiditis.** (Des irido-choroidites gonococciques.) *Recueil d'Ophtalmologie*, juin, 1905.

(4) **Lemierre, A. and Faure-Beaulieu, M.—Gonococcal septicemia and pyemia.** (Septicémié et pyohémie gonococciques.) *Gazette des Hôpitaux*, 17 et 24 février, 1906.

(5) **Bailliart.—A case of gonorrhœal ophthalmia regarded as an accident at work.** (Un case d'ophtalmie blenorrhagique considéré comme accident du travail.) *Recueil d'Ophtalmologie*, juillet, 1906.

(1) **Baylac** reports a case of severe double iritis and joint

affection in a patient, with a rheumatic family history, who had a mild but untreated gonorrhœa. Under treatment the eyes were cured. ERNEST THOMSON.

(2) **Gendron** records three cases of iritis which appeared for the first time as a complication of gonorrhœa and *recurred without being accompanied by any fresh urethral symptoms.* There was no sign of arthritism in any of the patients. Gendron considers that the occurrence of these relapses was due to the action of toxins rather than of living gonococci, an opinion which is confirmed by the fact that the hypopyon removed by paracentesis from two of the cases was examined and found to contain no microbes. R. J. C.

(3) A clinical lecture on the metastatic ocular complications of gonorrhœal urethritis. Cases of iritis, choroiditis, and neuro-retinitis are recorded by the author and attributed to the gonorrhœal poison circulating in the blood.—*Vide* THE OPHTHALMOSCOPE, Vol. III, p. 458, 1905.

(4) This is a long, interesting, and exhaustive paper, in which **Lemierre** and **Faure-Beaulieu** discuss the subject of general gonococcal infection, under the headings of gonococcal septicemia, gonococcal metastatic septicemia and pyemia, clinical forms of the disease, diagnosis, prognosis, and treatment. Only a short reference is made to eye lesions of a metastatic nature, namely, metastatic conjunctivitis (Moll), iritis (Lapersonne), dacryo-adenitis (Terson), retinitis, Tenonitis (Puech), and panophthalmitis (Panas). Of these eye lesions the authors say "they are probably metastases, because they are always connected with a gonococcal septicemia, but bacteriological proof is still wanting."

The paper, which contains full references to literature, should be read in the original by all who are interested.

ERNEST THOMSON.

(5) **Bailliart** records the case of a boy, æt. 15, who whilst removing some stains of printers ink from a tablecloth, got some liquid, composed of "essence" and ink, into his eye. The immediate symptoms were practically *nil*, but two days later the eye showed definite signs of acute infection, and a microscopical examination of the purulent discharge showed an abundance of intra- and extra-cellular gonococci. The patient had no urethritis. Recovery was rapid and complete. Whatever the consequences, the author considers that such condition should be regarded as a working accident, because (1) there was a definite injury, (2) the infection could not have occurred apart from the injury, as the patient had no urethral discharge, (3) the accidental origin of the trouble was recalled after an average incubation period for gonorrhœal ophthalmia.

Schmeichler recorded a similar case where a workman lost the sight of one eye through its infection by a fellow workman, who had a urethral discharge and who removed a foreign body from his eye. This patient was indemnified as for an accident.

Baudry saw two cases of infection, one by dust and the other by machine oil. One at least of these men was free from urethral discharge. Baudry takes an opposite view to that of Baillart, because purulent ophthalmia can only be due to contagious infection by the gonococcus, which is quickly destroyed by exposure to air, drying, or immersion in alkaline or acid oils.

It is probable that in all the cases the infection occurred through the fellow workmen's hands. J. JAMESON EVANS.

IX.—TUBERCULOUS AFFECTIONS OF THE EYE.

(1) **Coats, George.—A case of tubercle of the nerve head.** *Royal Lond. Ophth. Hosp. Reports*, Vol. XVI, Part 3.

(2) **Carpenter, George, and Stephenson, Sydney.—Tuberculosis of the choroid.** *British Journal of Children's Diseases*, June, 1906, *La Clinique Ophtalmologique*, 10 juillet, 1906, and *Die Ophthalmologische Klinik*, 25 August, 1906.

(3) **Péchin, Alph.—Thrombo-phlebitis of the central vein of the retina in a tuberculous subject. (Thrombo-phlébite de la veine centrale de la rétine chez un tuberculeux.)** *Archives d'ophtalmologie*, juillet, 1906.

(4) **Péchin, Alph.—A special form of tuberculosis of the uveal tract. (Forme spéciale de tuberculose du tractus uvéal.)** *Archives d'ophtalmologie*, août, 1906.

(5) **Gourfein.—Primary conjunctival tuberculosis. (Tuberculose conjonctivale primitive.)** *Archives d'ophtalmologie* septembre, 1906.

(1) The case recorded by **Coats** is that of a child, aged sixteen months, who died from general tuberculosis. The left eye was removed *post-mortem*, and examined pathologically. The point of chief interest lay in the fact that a large granulomatous mass was present in the eyeball, growing from the nerve head, which was proved to be tuberculous. There was no other lesion in the retina, but the mass extended well into the

nerve. Details of other cases previously reported are given, as well as full references to the literature. A plate shows the appearance of the growth and also of the sections. C. D. M.

(2) **Carpenter** and **Stephenson** publish a profusely-illustrated account of a large number of cases of tuberculosis of the choroid, based upon a communication read in May last before the *Société française d'ophtalmologie*. The authors have studied 80 cases met with in their own work, chiefly at hospitals for children in London. Of these cases, 49 were acute, 11 chronic, and 20 extinct or obsolescent. A study of the figures gives a wonderfully good idea of the appearances, considering that these pictures are reproduced upon the ordinary paper on which the journals are printed. Indeed, to appreciate the article so much depends upon seeing the drawings, that reference to the original is essential. One point, in particular, may, however, be mentioned. The authors admit that in the absence of a pathological examination it is impossible to affirm definitely whether a cicatricial patch in the choroid is of syphilitic or tuberculous nature. The question, as a rule, must be decided on the collateral evidence. E. T.

(3) A man of 30 years, affected with facial paresis, suddenly lost the sight of one eye, which remained painful for six days after the accident. Vision returned a few hours later, and after having been maintained for a day or so, was definitely lost. **Péchin** found that the blindness was due to thrombo-phlebitis of the central vein of the retina. There was a history of pneumonia, after which the patient had never recovered his health properly, and when the man came under observation on account of his eye, suppurating glands were present on one side of the neck. There was no cardiac disease. H. DE V.

(4) **Péchin** describes two atypical cases of tuberculosis of the uveal tract, which he regards not, as "attenuated" forms, but as forms which correspond with tuberculous intoxications of special evolution. One of the patients, a woman aged 26 years, presented tuberculosis of the lungs, while the other, a woman of 22 years, was of delicate constitution and looked tuberculous. The eye changes in the first case included the remains of an iritis, vitreous opacities, and a number of round or oval spots, of yellow colour, resembling drops of oil, arranged row upon row towards the periphery of the posterior surface of the cornea. Examination with oblique illumination and a lens was required to recognise these deposits. The second case was characterised mainly by episcleral and corneal deposits, of relapsing nature, keratitis punctata, and, later, by deposits comparable with those mentioned as present in the first case, by posterior synechiæ, and by a granuloma of the iris. S. S.

(5) Among 49,000 patients seen by **Gourfein** during the last eleven years at the *Fondation Rothschild* at Geneva, three cases only of tuberculosis of the conjunctiva have been recognised. The affection is therefore exceedingly rare. The prognosis is more serious than is generally thought. The ulcerous type of the disease is the one most likely to become generalised. There may be long remissions in the activity of conjunctival tuberculosis. The author reports two cases of primary tuberculosis of the conjunctiva (both confirmed by inoculation of animals), of which the first, in a child of five years, was followed by death from cerebral tuberculosis, while the second, in a patient of twelve years, was permanently cured by repeated excision and cauterisation of the granulations. S. S.

X.—TREATMENT.

(Ninth Notice.)

(1) **Baudet, H. P.—Indications for electric treatment.** *Ned. Tijdscrift voor Geneeskunde*, 1905, II, No. 22.

(2) **Koster.—Compressed medicaments in ocular therapeutics.** *Ned. Tijdscrift voor Geneeskunde*, 1906, I, No. 13.

(3) **Koster.—The treatment of diseases of the eye by means of chlorate of potassium.** *Ned. Tijdscrift voor Geneeskunde*, 1906, I, No. 16.

(4) **Spéville.—Two cases of blepharospasm cured by two different methods.** *La Clinique Ophtalmologique*, 10 mai, 1906.

(5) **Scholtz, K.—Determination of the action of jequiritol and jequiritol serum by means of experiments on animals.** *Archiv für Augenheilkunde*, Juni, 1006.

(6) **Santon, Henry.—On the treatment of rheumatic iritis by intravenous injections of sodium salicylate.** *La Clinique Ophtalmologique*, 10 juin, 1906.

(7) **Gasparrini.—A case of pulsating exophthalmos cured by instillation of adrenaline.** *La Clinica Oculistica*, June, 1906.

(8) **Renner.—On Bier's congestion hyperæmia in eye diseases.** (Ueber Bier'sche Stauungshyperämie bei Augenkrankheiten.) *Münch. med. Woch.*, 1906, Nr. 2, und *Centralbl. f. prak. Augen.*, Juni, 1906.

(9) **Verderau. — The therapeutic treatment of senile cataract.** *Archivos de Oftalmologia Hispano-Americanos*, Julis, 1906.

(10) **Fernandez.—An advantage and an inconvenience of stovaine.** *Archivos de Oftalmologia Hispano-Americanos*, Julis, 1906.

(11) **Standish, Myles.—Silver preparations in conjunctival disease.** *Ophthalmic Record*, August, 1906.

(12) **Bailliart.—The use of pilocarpine in ophthalmology.** (L'emploi de la pilocarpine en ophtalmologie.) *Bull. gén. de Therapeutique*, 15 septembre, 1906.

(13) **Roemer.—Bier's hyperæmia treament in affections of the eye.** *Wiener med. Wochenschr.*, April 21, 1906, and *Ophthalmology*, October, 1906.

(1) **Baudet** claims to have cured a slight form of keratitis by the high frequency current. G. F. ROCHAT.

(2) **Koster** uses tablets of homatropine, which are said to possess some advantages over Burroughs Wellcome's product. For instance, they dissolve much more readily in the secretion of the conjunctival sac. They are compounded with starch, and can be kept without change for at least three years.

G. F. ROCHAT.

(3) **Koster** has treated inflammations of the eye with chlorate of potassium, since the medicament is so frequently used in inflammations of the mouth and the throat. In a 3%-5% solution the drug does not cause any disagreeable sensation, when dropped into the conjunctiva. Its use recommends itself in all kinds of conjunctival inflammations, but especially in chronic conjunctivitis, with sensations of dryness, itching in the eye, and by formation of a foam-like secretion in the angles. Bacteriological experiments showed that the medicament acts as a weak disinfectant, and inhibits the growth of all kinds of bacteria of the conjunctiva, except staphylococci.

G. F. ROCHAT.

(4) **Spéville's** two methods of curing blepharospasm (facial hemispasm) both consist in causing paralysis of the facial nerve. In one case, this was done by injecting 1 c.c. of 80 % alcohol into the region of the point of emergence of the nerve. In the other, Abadie's method was employed. This consists in section of the facial and the implantation of its peripheral end on to the external branch of the spinal nerve. The latter method caused some interference with the functions of the muscles of the arm, and associated movement between the arm and the face.

ERNEST THOMSON.

(5) The purpose of **Scholtz's** experiments was to ascertain the toxicity of jequiritol, and to determine the extent of the protection, if any, conferred on the organism by jequiritol serum. A concentrated solution of Jequiritol (Jequ. IV Merck) was used in the investigation, and it was found that, of this, the minimum lethal dose for white mice was ·00003 grm., which, again, was neutralised and rendered innocuous by ·0006 grm. of the serum. The experiments showed that jequiritol had a definite toxic effect which could be accurately gauged, whilst, on the other hand, the serum offered protection of no mean order. Scholtz also observed that jequiritol ophthalmia was beneficially influenced in its course by subcutaneous injections of the serum, the good effect being the more evident the earlier the serum had been administered. PERCIVAL J. HAY.

(6) In this somewhat extended paper **Santon** gives a full account of the intravenous injection of salicylate of soda as a routine method of treating rheumatic iritis, scleritis, and keratitis. The method is said to be more active, more rapid, more lasting and less injurious in the matter of digestive trouble, deafness, etc., than oral administration. The only contra-indications appeared to be albuminuria and pregnancy. Santon uses the following solution, *viz.*, salicylate of soda, 5 grammes; cafein, 50 centigrammes; sterilized water, 25 grammes. He gives about 60 centigrammes of salicylate per day.

ERNEST THOMSON.

(7) **Gasparrini's** patient had noticed gradual increasing exophthalmos and diplopia for about a month; the disease had come on without known cause. Clinical examination revealed a pulsation synchronous with the radial, and a *bruit* which disappeared when the carotid of the same side was compressed. The patient was ordered small doses of iodide of potassium and instillations of adrenalin. In a few days there was noticeable improvement, and in about two months the symptoms had disappeared. HAROLD GRIMSDALE.

(8) Normal persons, subjected to congestion-hyperæmia by means of a rubber band around the neck, experience, after several hours, a feeling of tension and pressure in the ocular muscles, especially when the eyes are turned far in one direction or another. The nasal passages also feel swollen, and the palpebral conjunctiva, and, to a less extent, the ocular conjunctiva becomes red. Visual acuity, field of vision for white and for colours, accommodation and convergence, and tension (despite distinct hyperæmia of the retinal veins) remain unchanged. The method was applied in the case of young subjects whose eyes were internally normal but externally diseased. Five cases of simple keratitis diffusa were considerably improved by a congestion of 6 to 12

hours daily for the space of 2 to 4 weeks. Ulcus serpens, although it ran its course quickly and favourably, was not appreciably influenced. The ciliary pains, however, were abrogated under the congestion method. Eczematous and catarrhal ulcers, as well as older ulcers (non-vascular), were not remarkably affected. Neither the eye nor the general health suffered under the Bier treatment. S. S.

(9) In this paper **Verderau** gives some further cases, in which the use of subconjunctival injections of iodide of potassium has been followed by regression of lenticular opacities. There are 21 records, all of which show marked improvement. Verderau asks that other surgeons should try the method, which, if it does no good, at least does no harm, and is not very painful. HAROLD GRIMSDALE.

(10) **Fernandez** has found stovain specially valuable when given in injection, either subcutaneous or subconjunctival. The vaso-dilating power of stovain renders the risk of syncope less than after the use of cocain, but Fernandez has met with two patients who were poisoned by the drug. In each there was delirium and slight rise of temperature. Fernandez thinks that by reducing the strength of solution injected, it is possible to prevent intoxication. HAROLD GRIMSDALE.

(11) **Standish,** after insisting upon the value of clinical experience as contrasted with laboratory experiment, reports the results obtained with certain preparations of silver in cases of gonorrhœal ophthalmia among the patients admitted to the isolation ward of the Massachusetts Charitable Eye and Ear Infirmary. The cases are divided into two groups:—(1) those of ophthalmia neonatorum, and (2) those of gonorrhœal ophthalmia in adults. In both instances the figures refer only to such patients whose corneæ were unaffected upon reception. 1. *Ophthalmia neonatorum.*—Treated with argyrol, 25% to 50%, 201 cases, with subsequent corneal damage in 2%; with protargol, 150 cases, with subsequent damage 2%; with silver nitrate 50 cases, with corneal damage 6%. 2. *Gonorrhœal ophthalmia.*—In 32 cases treated with protargol there was corneal infection in 34·37%, while in 52 cases treated with argyrol that accident occurred in 34·61%* Standish gives publicity to a method of applying collyria, as argyrol, to the eye continuously, devised by E. G. Hussey, of the Massachusetts Eye Infirmary. After the skin in the neighbourhood of the eye has been washed with alcohol, a kind of dam around the eye is constructed with painter's putty, and the argyrol is poured

*The figures given in the abstract do not tally exactly with those contained in the original communication, into which several clerical blunders have apparently crept.—S. S.

into this receptacle. Standish concludes his communication with the following words.—"My conclusions are that the results above shown establish the fact that the modern silver preparations are efficient in the control of gonorrhœal infection of the conjunctiva, and that they have greater bactericidal properties in this disease than the laboratory experiments upon other micro-organisms would lead us to expect." S. S.

(12) **Bailliart** after discussing the local use of pilocarpine in cases of chronic glaucoma, describes with some enthusiasm its general action in diseases of the eye. It was first used in this way in the year 1875 by Abadie. Bailliart strongly advocates the hypodermic injection of pilocarpine in certain ocular affections, such as exudative choroiditis, detachment of the retina, vitreous opacities, retinal hæmorrhages, progressive myopia, interstitial keratitis, and toxic amblyopia. He claims, indeed, that by the use of pilocarpine all affections of the deeper membranes of the eye, accompanied by exudation or by infiltration, may be rapidly improved. He employs a solution containing 0 gr. 20 of the nitrate salt to 10 gr. of distilled water, and of this liquid injects to begin with six or eight drops, an amount later increased to ten drops (a centigramme of pilocarpine.) The author details the precautions that should be adopted in making the injections. S. S.

(13) The experiment was first made of tying an elastic band around the neck of a healthy person for from three to eight hours daily. The only result noted was a reddening of the conjunctiva. This method was then tried in young persons suffering from visible affections only of the eye, without internal complications. The results were gratifying in cases of interstitial keratitis. In five cases where such congestion was employed for from six to twelve hours daily, a decided improvement was noticed after from two to four weeks. Very little improvement, however, was noted in ulcus serpens and other forms of corneal ulcer, as well as in old opacities of the cornea. In none of the patients was this treatment followed by any injurious effects upon the eye or the general system. J. G.

REVIEWS.

The Royal London Ophthalmic Hospital Reports. Edited by William Lang, F.R.C.S. Volume XVI, part 4, June, 1906. London: J. & A. Churchill, 7, Great Marlborough Street. Price 5s. net.

This volume of the Royal London Ophthalmic Hospital Reports contains articles by Nettleship, Parsons, Usher and Fraser,

Hancock, Coats, Mayou, and Hepburn. They will be abstracted in due course in the columns of THE OPHTHALMOSCOPE. The volume, one may note, is illustrated more liberally than usual. An inset sheet inviting subscribers calls attention to the fact that the *Reports* was founded in the year 1857, and was the first English journal devoted exclusively to ophthalmology.

The Extra Pharmacopœia of Martindale and Westcott. Revised by W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B., D.P.H. Twelfth edition. London: H. K. Lewis, 136, Gower Street, W.C. 1906. 10s. net.

The twelfth edition of that wonderful compendium the *Extra Pharmacopœia* has reached us. It is a marvel of concentrated and accurate information not only about drugs, but also about a variety of subjects of interest to the medical man, as antitoxins, organotherapy, mineral waters, tests for urine, blood, etc. It is, however, unnecessary to say anything about this well-known compilation, except to venture the trite remark that it is simply indispensable to any up-to-date ophthalmic surgeon. For that matter nobody, engaged in the active pursuit of the medical profession, can afford to be without the book.

Die augenärzlichen Heilmittel. (Eye Remedies.) Von H. SNELLEN, Jun., Professor in Utrecht. Leipzig: Verlag von Wilhelm Engelmann. 1905.

This section of the new Graefe-Saemisch *Handbuch der Gesamten Augenheilkunde* is by Professor H. Snellen, Jun., and deals with eye remedies. It is published as a separate volume of 75 pages. A straightforward and simple account is given of antiseptics, astringents, stimulants, mydriatics, myotics, and sections are added on the disinfection of hands and of instruments. The chapters on anæsthetics and analgesics are contributed by Dr. A. Lürman, of Bremen. We miss any reference to the newer agents, especially x-rays, organo-therapy, and serum treatment. The *brochure* abounds in references.

Des Nouveaux Sels d'Argent en Thérapeutique Oculaire. (The New Salts of Silver in Ocular Therapeutics.) Par le Dr. A. DARIER. Paris: 9, Rue Buffault. 1906. Price, 3 francs.

The indefatigable Dr. Darier, the author of the widely-known *Leçons de Thérapeutique Oculaire*, has written a *brochure* of some eighty pages upon the newer salts of silver in ophthalmic

practice. His standpoint is essentially clinical, as opposed to that of the bacteriological laboratory, a thing to be rather thankful for than otherwise nowadays. That ancient favourite, the nitrate of silver, has for some years, in Darier's work, been replaced by the modern organic compounds of silver, more especially protargol and argyrol. The pamphlet before us describes, in an interesting and convincing way, the steps which led the author to take up this final position. Darier, of course, recognises the sterling qualities of the nitrate in the treatment of superficial affections of the eye, but he insists (and we think with justice) upon the difficulties, dangers, and pain that are liable to attend its use in ordinary out-patient work, especially when it is applied by those who have not gained the experience necessary to manage it to the best advantage. The bactericidal properties of the salt are due, Darier thinks, to the silver base, whilst its irritating and caustic qualities are connected with the combined acid, set free by the combination of the silver with the albumins of the conjunctiva. After numerous experiments with argentamin, argonin, largin, itrol, and actol, Darier has reached the definite conclusion that protargol and argyrol are the best two compounds to employ. As drops for the patient to use at home, he advises a 5% solution of protargol, and for direct application by the surgeon a 25% solution. As regards argyrol, a 5% solution is recommended for home use, and a 10% to 20% solution in serious cases, such as purulent ophthalmia. Solutions of both salts should be freshly made with cold water. It is a pleasure to read so enthusiastic a book as the one before us. It makes one realise that, after all, the aim of the surgeon is to cure his patient, and it gives, besides, valuable hints as to how that is to be accomplished in the class of case of which Dr. Darier treats.

The combined Treatment in Diseases of the Eye. By G. HERBERT BURNHAM, Professor of Ophthalmology and Otology in the University of Toronto, etc. London: H. K. Lewis, 136, Gower Street, W.C. 1906. Pp. 92. Price 3s.

It is a little difficult to know what to say of this book, in which Dr. Burnham advocates the treatment of practically every disease of the eye by what he calls the "combined treatment" — that is to say, by the hypodermic injection of pilocarpine, together with the internal administration of potassium iodide and mercury. Indeed, he goes farther, and hints that similar treatment is applicable not only to affections of the eye but also to diseased conditions of the body generally. Dr. Burnham's recommendations, however, are the outcome of sixteen years' experience. They are therefore worthy of serious

and careful consideration. The details of the plan, upon which the author lays great stress, are as follows.—The patient, clad in ordinary under-clothes, lies in bed in the blankets in a room, the temperature of which is from 65° F. to 75° F., and from which draughts are carefully excluded. The blankets are tucked in, especially along the spine, and a hot water bottle is placed at the patient's feet. Alcohol is not given. One-twelfth to one-half grain of pilocarpine is injected into the forearm, and the writer prefers a solution containing grs. v. to the drachm, mainly because with so small a quantity of liquid many injections can be made without giving rise to any particular soreness or induration of the parts. The patient remains in bed until perspiration ceases, which is usually in from 1½ to 2 hours. He is then dried with a warm towel and allowed to go about the house. The first series of injections ranges in number from 10 to 21, given (we understand) daily. After an interval of two to four weeks, seven to ten additional injections are made. "This series is then adhered to and kept up with intervals varying from four to eight weeks. Eight weeks is the longest interval that can, with safety, be allowed between the series. If this limit be exceeded, though there may be no relapse or loss, still there is no further improvement." With regard to mercury, Burnham gives that remedy as a powder, pill, or capsule, three times a day, containing mercury with chalk, gr. i, and powdered opium and powdered ipecacuanha, of each gr. $\frac{1}{10}$. The potassium iodide (combined with grs. v. of potassium bromide) is given in doses of v to xv grains, three times a day, after food. But the doses both of mercury and of iodide are reduced (or sometimes altogether omitted) during the period of injections, and resumed as soon as the latter are completed.

Festschrift zum 25 jährigen Professoren: Jubiläum von Hermann Kuhnt. Supplement to Vol. XVI. of the *Zeitschrift für Augenheilkunde*, 1906.

Professor Kuhnt is to be warmly congratulated upon the work contained in the contributions to this volume. Richard Hoffmann leads the way with a paper on "Inflammatory Affections of the Orbit and Eye following Purulent Inflammations of the Accessory Sinuses." One would almost be disappointed not to find a study of the relations between the orbit and the surrounding parts. Apart from the fact that Kuhnt himself has been a pioneer in this direction, the subject is "in the air," if we may use the expression. Hoffmann does not present his readers with anything new, but some of his cases are of interest. The next paper is by Helmbold, who describes an ingenious instru-

ment for estimating the interpupillary distance. Krüdener writes on amblyopia arising from poisoning with atoxyl, methylalkohol, carbon bisulphide, and Felix Masaud gives examples of each. The case of atoxyl poisoning derives a special interest from the fact that the number of anilin derivatives and their compounds is daily on the increase, so that ophthalmic surgeons are likely to meet with similar cases more and more frequently. It may be noted that the patient became quite blind in one eye in three weeks, and almost so (V. = $\frac{1}{15}$) in the other eye four weeks after the appearance of the first symptoms. Küsel discusses the development of the canaliculi; and Schauz relates rather a curious instance of purulent metastasis. The patient hit his head against a door. Three days afterwards a large abscess formed at the seat of injury, over the right temple, and four weeks later purulent iritis set in in the left eye. In both lesions the pathogenic organism was the staphylococcus pyogenes aureus. The same author contributes a short clinical paper on collargol. Heinrich Schmidt follows with an article dealing largely with Mules' operation. In order that the prothesis may be retained as long as possible, he says that it should consist of a substance, that can be easily sterilised, that will not be absorbed, and that is not altogether foreign to the body. He recommends balls of calcined bone, as meeting these requirements best. A contribution by Schrader concerns an abnormal vascular arrangement around the optic disc showing obliterative endarteritis and secondary choroidal atrophy. The best and most interesting paper is a valuable one by Hugo Wolf on the physical, physiological, and geometrical optics of skiascopy and ophthalmoscopy. It deserves to be read in the original. The author discusses first of all the physical phenomena associated with skiascopy. He shows that the point where the "shadow" becomes indistinct coincides with the disappearance of all light from out of the optical system, and demonstrates further how the various phases in skiascopic examination depend upon fundamental changes in the field of vision and in the illumination. Particular reference is made to the quantity upon which the reversal of the shadow depends. The bearings of these phenomena upon spherical aberration and astigmatism with oblique axes are discussed, as also the mathematical aspects of the reversal of the shadow and the nature of the skiascopic image. The article is a long one, and refers, perhaps, to questions with which the ophthalmic surgeon does not often occupy himself, but it will repay a careful perusal. Ziegenspeck closes the list of contributions with a note on a case of detachment of the retina due to a so-called preclimacteric hæmorrhage.

P. J. H.

De l'Emploi des Alcaloïdes en Solution Huileuse. Par le Docteur Scrini. (**On the employment of alkaloids in oily solution.**) Paris: Vigot Frères, 23, Place de l'École-de-Médecine. 1906. Price 2 francs 50 centimes.

Dr. Scrini is known to ophthalmic surgeons, not only as the *chef de clinique ophtalmologique* of the Faculty of Paris, but also as an authoritative writer on ocular therapeutics. His present book is devoted to advocating the advantages of oily solutions of the various alkaloids employed in eye work. He lays much stress upon the drawbacks of aqueous solutions, which are said to provoke lacrymation and blepharospasm. He is on sounder ground, we think, when he impugns those liquids on the score of their chemical instability and their tendency to develop micro-organisms and fungi. Various means have been devised to remedy these disadvantages, including sterilisation of the liquids by boiling or by the addition of antiseptics, or by replacing the salts in common use by others possessing antiseptic properties. It has been proposed to substitute watery collyria by ointments, or by glycerine, either alone or mixed with starch under the form of a glycerole. Particles of paper (Streatfield) or of gelatine (Hart) impregnated with the alkaloids have been tried and abandoned. The introduction of vaseline marked a forward step, and the new agent was speedily pressed into the service of ophthalmology, in this country, more especially by Lawson, in America by Seely, and in France by Galezowski, Chibret, and Panas. Dr. Scrini recalls the fact that oil was employed in the treatment of eye diseases by Antoine Maître Jean in 1707, by Marc-Antoine Petit in 1815, and by Scarpa in 1821. In more recent times the use of oil has been advocated chiefly by British and American surgeons. Lloyd-Owen, of Birmingham, was a pioneer in this direction, since in 1873 (*British Medical Journal*, 1873, II, p. 536) he advocated the use of atropised castor oil in the treatment of certain corneal affections. A couple of years later, Green, of St. Louis, suggested that the alkaloid and not its salt be adopted in using oily solutions. Andrews ten years later expressed his preference for olive oil as a menstruum for dissolving cocaine and atropine. Dr. Scrini's experiments on animals and man lead him to the conclusion that the action of some oils upon the eye is just as irritating as that of others is the reverse. The non-irritating oils are olive oil, oil of vaseline, and nut oil* (*huile d'arachide*); the others include almond oil, neats-foot oil, and, to a less extent, castor oil. Oil of vaseline, although otherwise

* Dr. W. H. Martindale, in answer to our enquiries, informs us that by "nut oil" is usually understood pea-nut oil, as mentioned in the *Extra Pharmacopœia*, p. xxvii, although commercially other oils may be sold under that designation.—Editors.

a good vehicle, has but a feeble power of dissolving the basic alkaloids, a fact that causes Dr. Scrini to employ in practice either olive or nut oil. The oil is sterilised by Delacourt's plan, which consists in washing the oil for several days with 95% alcohol, decanting it, and heating it for ten minutes in a sand-bath to a temperature of 120°. Details are given regarding the best ways of preparing the solutions and the solubilities of the various alkaloids. It may be stated that the alkaloids themselves are used, and that they are dissolved in the menstruum in a water bath. Amongst the manifold advantages of oily collyria Dr. Scrini enumerates their facility of application and their remarkable tolerance by the eye, their rapid, intense, and prolonged action, their stability, and, last but not least, the fact that they remain aseptic for an indefinite period. We consider that the author has made out an excellent case for a wider employment of oily solutions of the alkaloids used in eye work, more especially, perhaps, of physostigmine. We welcome Dr. Scrini's contribution to the subject.

The Eye and the Nervous System. Their diagnostic relations by various authors. Edited by WM. CAMPBELL POSEY and WM. G. SPILLER. (Lippincott Co., Philadelphia and London.) 25s. net.

We may begin a review of this work by cordially expressing the pleasure with which we greet its appearance. It is unquestionably a work that was greatly needed. In spite of the paramount importance to both the ophthalmologist and the neurologist of a detailed knowledge of the relations of their respective departments of internal medicine to each other, and of the ground common to both, it has hitherto been impossible to acquire more than a superficial part of this knowledge without the expenditure of a vast amount of labour. In English there is no work that attempts to collate the extensive researches that have been made, particularly of late years, in this province of medicine, and even in German there is no work of this size extending over exactly the same ground. For instance, Wilbrand & Saenger's *Die Neurologie des Auges*, perhaps the greatest classic of the kind, approaches the subject from a rather different standpoint, one nearer to that of the ophthalmologist alone. It is manifest, therefore, that a book of this sort would be welcome were it written with only average capacity. Professors Posey and Spiller have gone further however than this. In the care they have given to the general arrangement of the book and to the choice of eminent collaborators, they have shewn such thought and judgment that the result has been the production of what must immediately take rank as a standard work in medicine.

The book is built in twenty-three chapters. After a first chapter on the anatomy of the cranial nerves, the next seven deal with the eye, vision, the retina, and the nerves that relate to the eye. This part might have formed a separate section of the book, as the remaining fifteen chapters are concerned directly with neurology. This early part treats its subject in rather a different way from the later part, inasmuch as necessarily it has to do rather with methods of examination and with the significance of various symptoms. The later part of the book, on the contrary, may be said to treat of its subjects from three points of view, and in most of its chapters there are indications that the writers are fully conscious of that fact. First, in the various affections of the nervous system, the ocular complications have, of course, to be described in detail; secondly, a brief, though adequate, account of the other symptoms of the affection is presented, so that the ophthalmologist is enabled to diagnose, or at least to suspect, the presence of the condition in question; thirdly, an amount of common ground has to be gone over, covering such varied topics as ocular vertigo, Graves' disease—which, by the way, we regret to see still described as exophthalmic goitre—mental disturbances after eye operations, etc. One is surprised to find the neurological side dealt with so fully: for instance, there is a chapter of 44 pages solely on tremors, reflexes, and gaits. The result of this is to make the book more particularly valuable to the ophthalmologist who is specially interested in the neurological aspect of his branch of study than to the neurologist. Frazier adds a chapter on the surgical treatment of intracranial lesions causing disturbance of vision. Eleven pages of this deal with trifacial neuralgia, the operations for which are described fully, with a detailed exposition of *technique;* it is unfortunate that no reference is made to the work that has been done in England on this subject, for in the hands of certain operators the mortality reaches nowhere near the 12 per cent. here mentioned. The criticism might be added that the whole topic is out of place in such a book, and the more justly in that its relation to ophthalmology is dismissed in four lines.

As always the case with a work that is the product of many writers, the different sections impress one as not being of equal value, although a very high standard is maintained throughout. Perhaps the most notable are: Chapter III on the Psychology of the Visual Act and the Focal Diseases of the Visual Cortex, by C. K. Mills – here the word psychology is used quite improperly instead of the word physiology—; Chapter V on the Extra-ocular Muscles, by Duane; Chapter IX on Tumours and other Lesions of the Brain, by Spiller; Chapter X on Bulbar Diseases, by

Taylor; Chapter XII on Parasyphilitic Affections, by Dercum; Chapter XVI on Neuroses and Psychoses, by de Schweinitz; Chapter XX on the Psychological Effects of Operations on the Eyes, by Posey; and Chapter XXII on Tremors, Reflexes, and Gaits, by Sailer. The ocular signs of Graves' disease are described by Posey with an admirable completeness, but his account of the pathology of the disease has little that is modern in it, while in his otherwise full account of the treatment he astonishes one by not even mentioning Moebius' thyroidectin, on which such considerable researches have been made in the past few years. Mills, in describing in detail the work of Mott, Campbell, and others on the histology of the visual cortex, does not refer to J. S. Bolton's researches, which are amongst the most complete that have yet been made on the subject. In the course of 17 pages on word-blindness he makes no reference to the increasingly important and interesting subject of congenital word-blindness; this is the stranger since he quotes extensively from Hinshelwood, who was one of the first to recognise this condition. Sailer writes 22 pages on reflexes, but in the section on the lower limb mentions only Remak's and Babinski's besides the knee jerk; this is one of the most important omissions in the whole book. Within the past three years a number of reflexes have been described, such as Oppenheim's, Bechterew's, Kurt Mendel's, Schäfer and Laserew's, etc., that bid fair to rival in importance those mentioned. There are in the book a number of lesser omissions that, no doubt, will be remedied in the next edition.

The general arrangement is excellent, although here and there further suggestions may be allowable. For instance, it is not easy to see why Friedreich's disease should be grouped with arterio-sclerosis and paralysis agitans rather than with the other diseases of the spinal cord. The account given of that disease is very sketchy indeed; one is astonished to find such a rare complication as optic neuritis referred to, while no mention is made of the important one of optic atrophy which Marie regards as being so valuable in helping to differentiate the cerebellar (Nonne-Sanger Brown) type from the spinal.

One is disappointed not to find a short introductory chapter, dealing in a broad general way, with the relation of ophthalmology to neurology. It has become no one's duty therefore to call special attention to such matters as the circumstances under which ocular symptoms may be mistaken for a disease and treatment directed only locally. Even when the diagnosis is made, as, for instance, in the case of an hysterical manifestation, the importance of general treatment is often overlooked, and the transference of an eye symptom to an unrecognised mental

symptom may be looked upon by the ophthalmologist as a cure of the disease, with grave consequences to the patient.

The illustrations form one of the most prominent and excellent features of the volume. They could hardly be bettered. The make-up of the book, including the proof revision, is as admirable throughout as we have come to expect from American publishers.

In conclusion, we can simply record the opinion that this volume is indispensable to every neurologist and ophthalmologist who aims at keeping in sight of the frontier of his science.

ERNEST JONES.

NOTES AND ECHOES.

Appointments.

MR. George Coats, pathologist to the Moorfields Hospital, a contribution from whose pen will be found in the present number of THE OPHTHALMOSCOPE, has been appointed ophthalmic surgeon at the Great Northern Central Hospital; and Mr. A. H. P. Dawnay, ophthalmic surgeon to the Hounslow Hospital. Dr. Frank Vinsonhaler has been appointed professor of ophthalmology in the medical department of the University of Arkansas; and Dr. N. A. Young, assistant surgeon to the Illinois Eye and Ear Infirmary. Dr. W. T. Shoemaker, of Philadelphia, will succeed Dr. James Moores Ball as Editor of the *Annals of Ophthalmology*. Dr. O. Fehr, for several years assistant in Professor Hirschberg's *Augenheilanstalt* and a well-known contributor to the pages of the *Centralblatt für praktische Augenheilkunde*, has been appointed director of the eye department of the Rudolf Virchow-Krankenhause of the City of Berlin. Our contributor, Dr. Darier, of Paris, has been charged by M. Clemenceau, the French Minister of the Interior, with a mission in Germany, for the purpose of studying the hygiene of sight in schools, and also of reporting upon the organisation of the different eye cliniques.

* * * *

Obituary.

DEATH has been busy in our ranks of late. Mr. W. Spencer Watson died on September 17th, at 44, Chepstow Place, London, W., at the age of 70 years. Mr. Watson (the son of a London practitioner) was one of the few remaining surgeons who combined the two specialities of ophthalmology and laryngology, and he distinguished himself in both. He had been surgeon to the Royal Eye Hospital, Southwark, to the Central London Ophthalmic Hospital, and to the throat department of the Great Northern Hospital. Until some years ago, when he retired from active

professional work, Mr. Watson was a frequent attendant at the meetings of the Ophthalmological Society, of which he was an original member. He served upon the Council of the Society from 1883 to 1886. He was the author of several important books and monographs, including one on *The Anatomy and Diseases of the Lacrymal Passages* (1892), *Abscess and Tumours of the Orbit, and Keratitis* (1864). It is sad to remember his last years were clouded by total blindness, the result of an operation for cataract. Dr. William Brandegee, senior assistant surgeon to the New York Eye and Ear Infirmary, died from cerebral hæmorrhage at the early age of 42 years. Wilhelm Czermak succumbed to apoplexy at Innsbruck on September 8th last. He was born at Brünn on October 12th, 1856. He studied at Gratz, and then became a pupil of Stellwag in Vienna. From 1883 to 1887 he acted as assistant in the Augenklinik in Gratz, and from 1887 to 1892 was assistant to Fuchs in Vienna. Czermak was the author of *Die Augenärztlichen Operationen* (1893), and of numerous communications upon ophthalmological subjects. Last, but not least, we regret to have to report the death, at the age of 68 years, of Herman Cohn, professor of ophthalmology in the University of Breslau, an appointment that he had held for thirty-two years. He was a voluminous writer on ophthalmological subjects. His best known work, *Hygiene of the Eye*, was translated into English by Turnbull in 1886, and may be said to have formed the basis of practically all the subsequent work upon the subject of school hygiene. Another great statistical work, published by Cohn in 1896, dealt with the prevention of ophthalmia in newly-born children (*Ueber Verbreitung und Verhütung der Augeneiterung der Neugeberenen*).

* * * *

Prizes.

THE Imperial Hungarian Minister of the Interior announces, through Professor Dr. Emil v. Grosz, the commissioner for trachoma, a prize of one thousand crowns for the best essay on the etiology of trachoma. The essays, which must be in English, French, German, or Hungarian, must be received by the Belügyministerium, I, Var, Budapest, Hungary, not later than December 31st, 1908. The decision of the judges to be selected by the Minister of the Interior, will be announced in September, 1909, on the occasion of the assemblage of the Medical Congress at Pesth. It is announced by the British Medical Association that the Middlemore Prize, consisting of a cheque for £50 and an illuminated certificate, will be awarded next year. The subject chosen is "Ophthalmia Neonatorum, with especial reference to its causation and prevention." Essays should be

sent to the General Secretary of the Association, and be received by him not later than April 30th, 1907. The adjudicators will report to the Council of the Association on July 3rd, and the prize will be presented to the successful essayist at the annual meeting of the Association, to be held at Exeter, July 30th to August 2nd, 1907.

* * * *

The Municipal Treatment of Trachoma.

As anticipated some years ago by those in a position to know the facts, considerable difficulty has been experienced by the Metropolitan Asylums Board in filling their two special poor-law schools for ophthalmic children, situated one at Swanley and the other at Brentwood. The dearth of applicants has induced the Local Government Board to issue a circular letter to the guardian bodies of London calling attention to the "apparent" want of appreciation of the schools in question. The circular states that, seeing the institutions have been provided, it is obviously in the interests of diseased children that they should be sent to them. An argument much more likely to appeal to the recalcitrant and cheeseparing Boards is also adduced, namely, that although under the Metropolitan Poor Act, 1867 (section 32), the expense of maintenance of any child sent by a Board of Guardians to one of these institutions is charged to the poor law union that sends the child, yet under the Metropolitan Poor Amendment Act, 1870 (section 69), the Guardians are entitled to be repaid this expense from the Common Poor Fund. As pointed out before in these columns, the machinery for isolating and curing trachoma among the poor-law population has now been provided, but a fatal flaw exists, inasmuch as there is no systematic method of detecting the disease among the children in the various schools. This defect can be remedied only by the inspection at regular intervals of every inmate of the London poor-law schools, district and separate. Moreover, when such disease has been detected means must be devised to compel the guardians to avail themselves of the advantages of the isolation provided by the Asylums Board. It is simply a public scandal that vast sums of money should be spent in building, equipping, and staffing the ophthalmic institutions of the Asylums Board, and that the guardians should not be compelled to send diseased children to those places. Instead, it is in many instances to be feared that the children are not only allowed to go untreated, to the manifest danger of their eyesight, but, even worse, are permitted to sow the seeds of an infective and dangerous and painful disease broadcast among the other children. It is in this way that ratepayers' burdens are recklessly manufactured by certain guardian bodies of the metropolis.

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BRITISH MEDICAL ASSOCIATION.

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The Council of the British Medical Association now invites Essays on the subject of "Ophthalmia Neonatorum, with especial reference to its Causation and Prevention." Essays should be forwarded to the General Secretary, marked "Middlemore Prize Essay," so as to be received by him not later than April 30th, 1907.

The Adjudicators will make their report to the Council of the Association on July 3rd, and the Prize will be presented at the Annual Meeting of the Association to be held in Exeter, July 30th to August 2nd, 1907.

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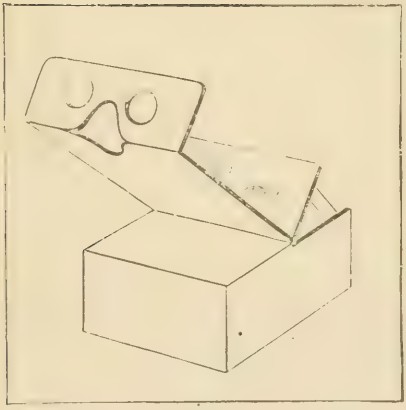

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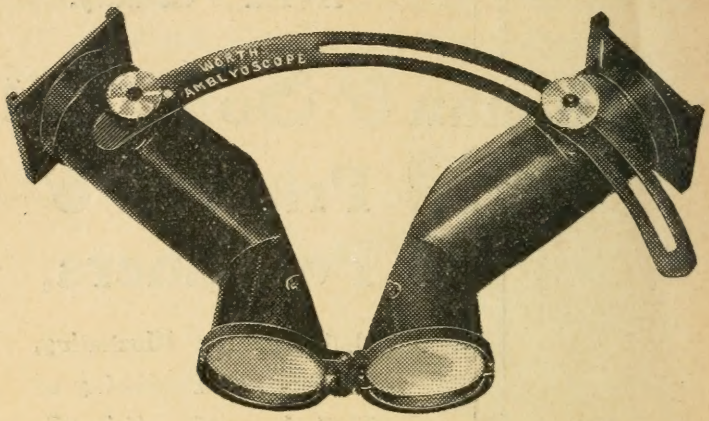

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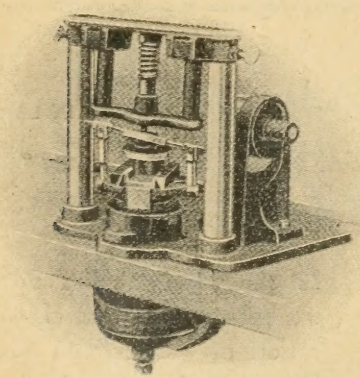

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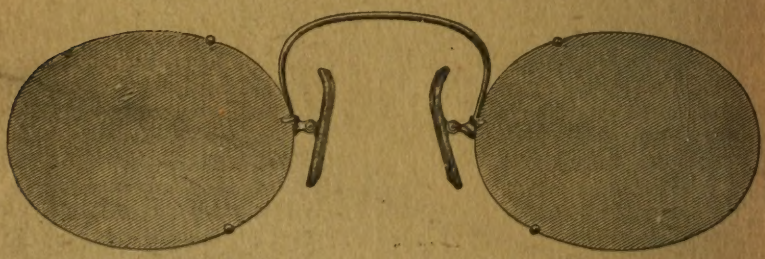

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